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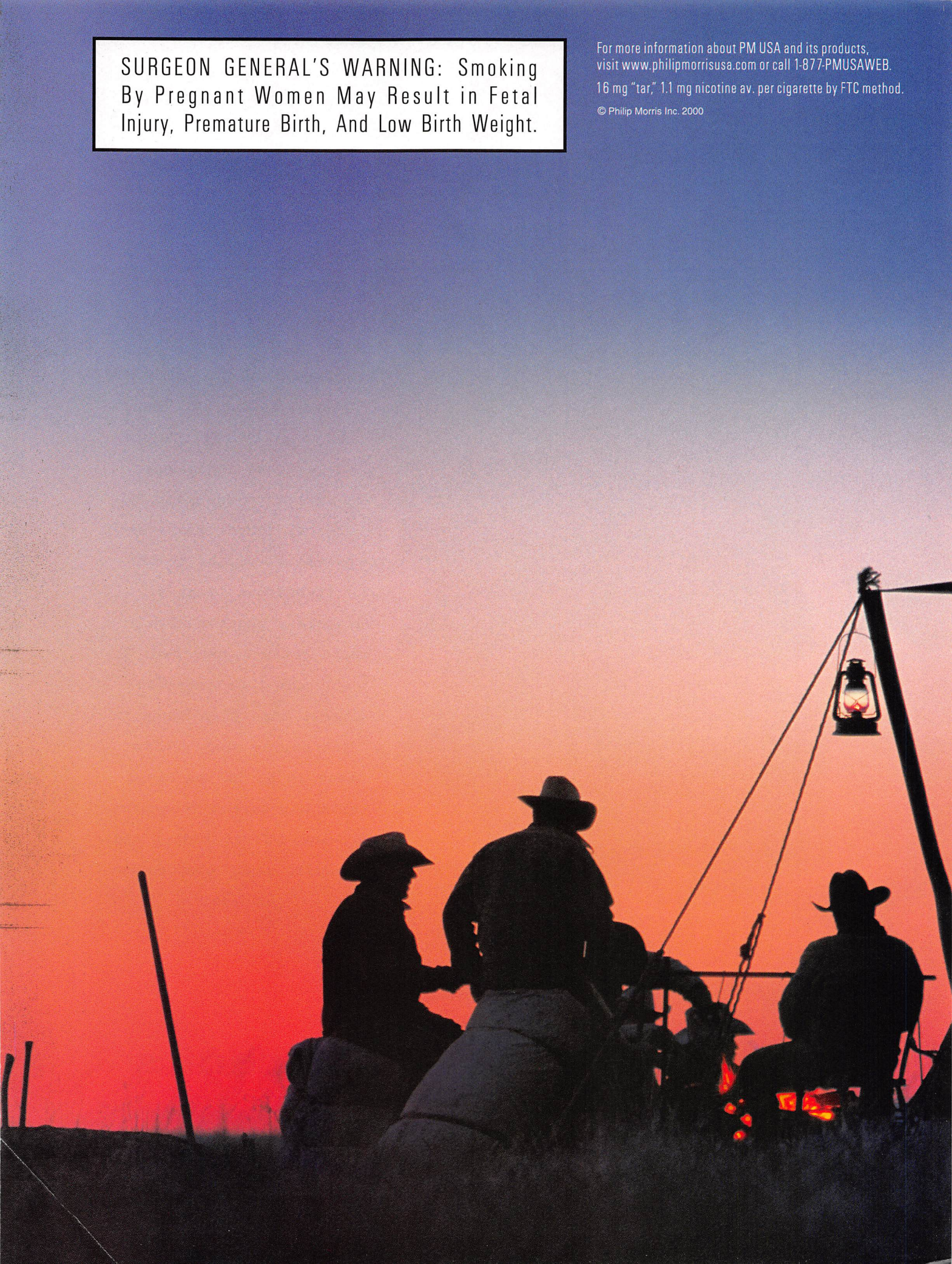
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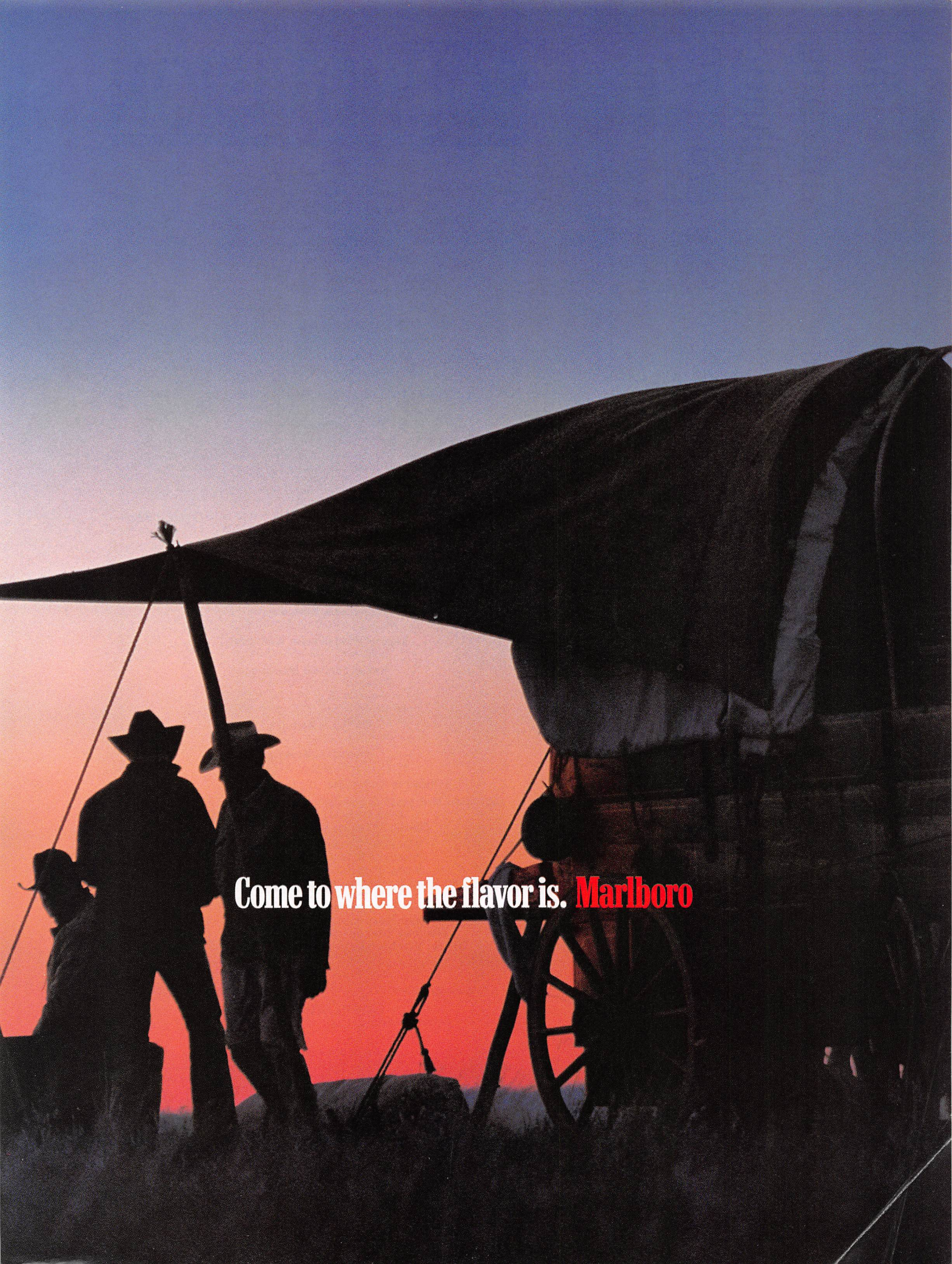
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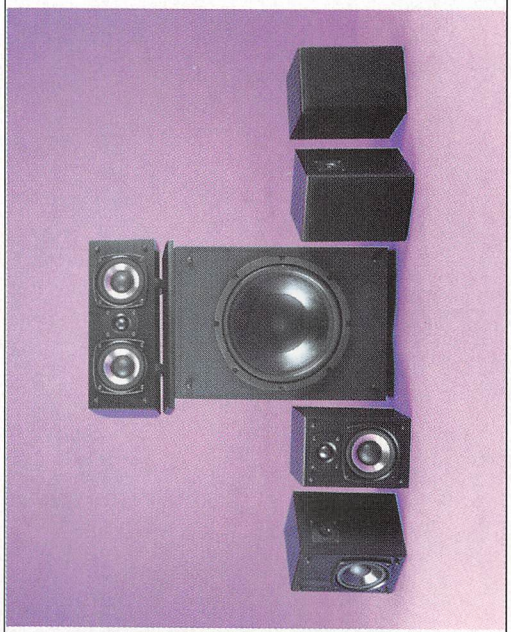



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track one

DVD-Audio . . . Halfway

Much as I'd like to muster up some enthusiasm over the arrival of the first DVD-Audio players (see "Random Play," page 20), it's hard to get excited when — apart from a couple of sampler discs that come with the players — there's no software! You can go out now and buy a Panasonic (or sister-brand Technics) DVD-Audio/Video player, but good luck finding any high-resolution, multichannel music recordings — you know, the kind that are the reason DVD-Audio exists in the first place. At least Panasonic had the foresight to put out DVD-*Audio/Video* machines that can also play regular DVDs and CDs.

It's not that I like to complain, or that I'm impatient, but our past dealings with DVD-Audio have been . . . well, let's just say frustrating. Regular readers may remember our hands-on preview of a prototype Pioneer DVD-Audio player in April 1999. At that time the player was slated for release in the fall. Ken Pohlmann marveled at the "remarkable realism" conveyed by a handful of experimental recordings and concluded that "DVD-Audio is an incredible format." We thought it was pretty cool to give readers a sneak peek at the new format a few months before the player would reach store shelves. But last fall came and went with no sign of DVD's audio-oriented cousin.

Industry insiders insist that DVD-Audio is a done deal, that the major record labels have blessed it, so where are the discs?



Then we reviewed what was supposed to have been the real (no kidding) "first DVD-Audio player" in our January 2000 issue. The review was timed to coincide with a planned December 1999 launch in stores. Once again, Ken Pohlmann was impressed with DVD-Audio. But a few days before the January issue hit newsstands, an embarrassed Panasonic exec called to break the news to me that Japan had decided to *postpone* the U.S. launch for another six months. The DVD-Video encryption system had recently been hacked by a kid in Norway, and that was apparently enough to spark renewed record-company paranoia over the robustness of DVD-Audio's copy protection. *Strike two!*

While we've got to give Panasonic credit for hitting its revised timetable and being the first to market with a DVD-Audio player, what's up with the record companies? Industry insiders insist that DVD-Audio is a done deal and that the major labels have blessed its new-and-improved encryption system, but no one was willing to talk specifics about which DVD-Audio titles will be released — or when. We've gotten a few vague responses that suggest some titles may be coming this fall. Cornered about the delay in getting discs to market, label execs point to the learning curve for DVD-Audio authoring tools, the limited availability of those tools, and the potential complexity of acquiring rights for the supplemental material that has been promised for DVD-Audio discs. Meanwhile, the number of Dolby Digital-encoded 5.1-channel music DVDs continues to grow, leaving many DVD-player owners — 8 million and counting — wondering what the fuss is all about.

Now for a few words about this issue: We've dedicated 31 pages to what are arguably the most important audio components of all, because they play the largest role in determining the sonic character of your home theater — speakers. In the test report section, we present reviews of three very different home theater speaker suites: MartinLogan's exotic Scenario system (page 45), Velodyne's first six-piece surround sound package (page 50), and an unusual system from a small company you probably haven't heard of, Anthony Gallo Acoustics (page 58).

We're also proud to present first looks at two other exciting products: RCA's 38-inch direct-view HDTV, which sells for less than $4,000 (page 63), and from Hitachi, the world's first combination DVD player/CD recorder (page 67). Also, don't miss "Download Showdown II" (page 113), a fascinating report by David Ranada on what a handful of expert listeners discovered about the sound quality of three popular Internet audio data-compression schemes. Finally, if you yearn for the latest in home theater sound, turn to page 121 for the lowdown on Surround EX, the new 6.1-channel soundtrack format used for a growing number of DVD movies. Happy reading!

Bob Ankosko, Editor in Chief



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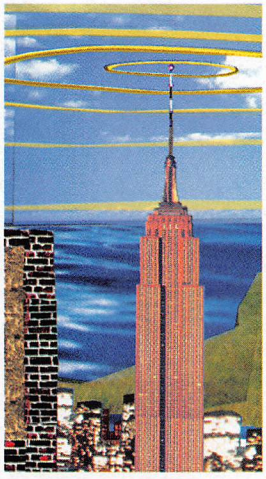
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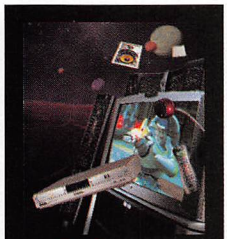
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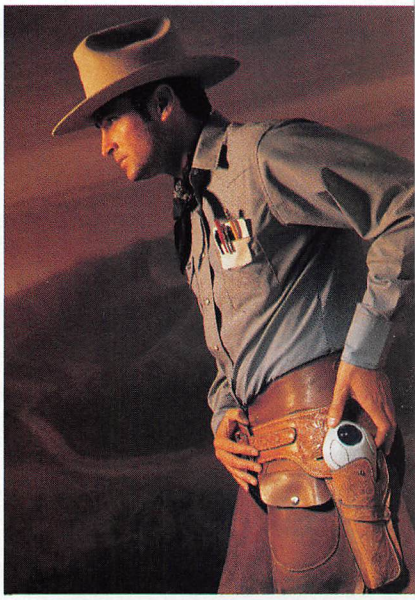
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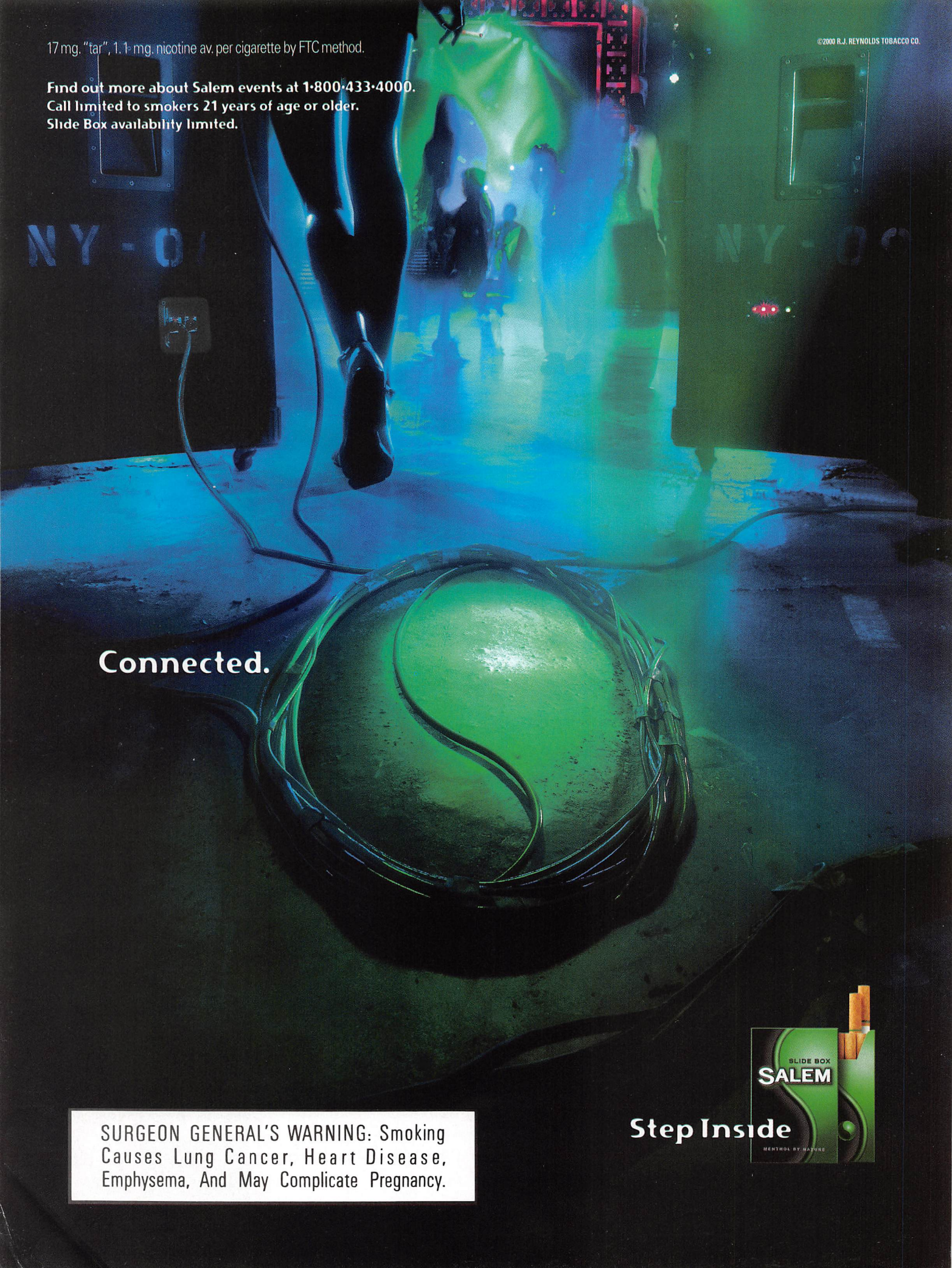
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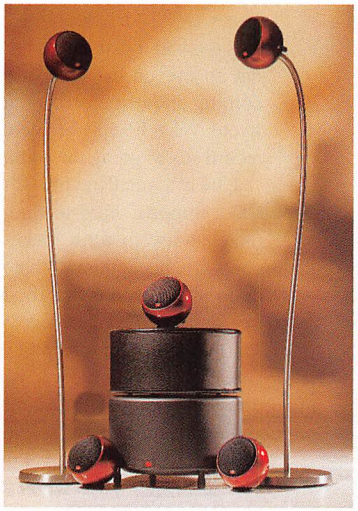
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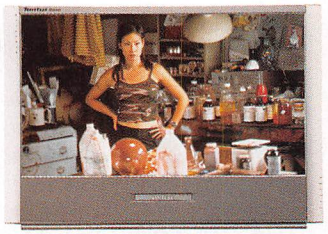


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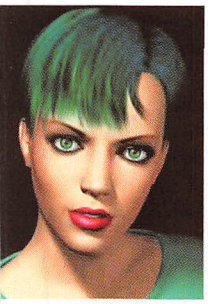


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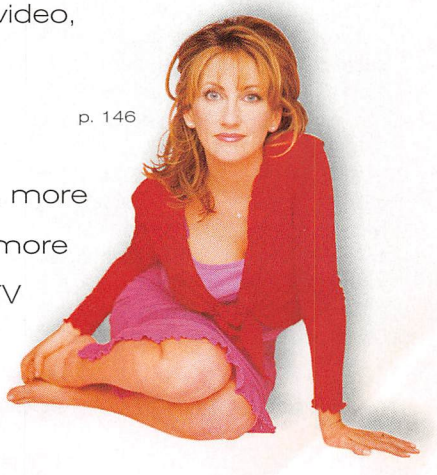
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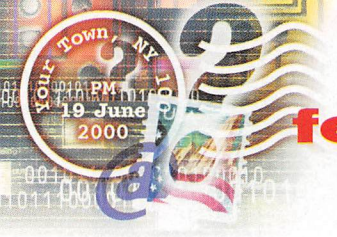
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feedback

CD Prices

When I read editor in chief Bob Ankosko's "Track One" editorial in July/August, about the Federal Trade Commission (FTC) ruling that ended the use of minimum advertised prices (MAP) by the big evil record companies — well, I just had to laugh. "I'll be keeping an eye on the local record stores in the coming months, looking for bargains," he wrote. What he may be seeing is a lot of local record stores going out of business.

I own a small record store. We sell used CDs, imports, hard-to-find CDs, and other merchandise to fill a niche the big-box discount chains ignore. What most consumers don't understand is that the MAP system was put in place to create a level playing field. Before MAP the big chains, like Best Buy and Circuit City, sold records below cost, making up for it by selling a washing machine or two. I cannot compete by selling CDs at a loss. The record companies, who were heroes to us little guys (the guys who sell the really cool music), will get paid no matter what. They and the big chains didn't get hurt by this decision at all, only the small retailer who really cares about music. **Derrick Somerset**
Chicago, IL

I think there will always be a place for small, innovative retailers who have an online presence and distinguish themselves from the big boys by selling imports, hard-to-find CDs, and, as you put it, "the really cool music." The big discount chains can't compete in those areas. — Ed.

Here's Howie!



In the June issue we asked readers to help name the cartoon character created for "The Setup," our occasional series explaining how to install and optimize different types of A/V equipment. We got a lot of responses, many of them ringing changes on audio/video or A/V, such as "Auvid," "Avery," and "Avie," or on our initials ("Savi"). Others were comfortingly low-tech ("Andy Ampere," "Sparky"), while some left us chuckling ("Wired Earp," "Elvis Einstein," "Stewart Technibobble").

The ***S&V*** staff voted on the names, and our $100 prize goes to Rick LeRoy of Hickory Corners, MI, who suggested "O. Howie Helps." Since the whole name won't fit on our handyman's shirt patch, we've shortened it to just "Howie." Our thanks to everyone who entered!

While I can respect objections to music piracy when the artists' interests are harmed, it is difficult for me to feel any sympathy for the record labels. After all, these are the same greedy jokers who showed their contempt for the consumer every time they induced retailers to charge $17 to $20 for a new CD that might contain only 35 minutes of music.

The labels also don't blink when they issue the tenth version of a "Greatest Hits" collection by a particular artist, adding only a couple of songs not on the previous versions. Instead, they should go into the vaults and issue two albums from an artist's back catalog on a single CD more often. **Joel W. Bird**
Fort Worth, TX

When I began to buy LPs in the 1950s, the premium ones cost $4.98. Today, I buy premium CDs for an average of $8 a disc, which represents less than an hour's labor by a factory worker. Twice that price would be a bargain, so why are people complaining about the price of CDs? **Kenneth H. Fleischer**
Los Angeles, CA

We want to know where you shop!

In "Track One" last issue, Bob Ankosko quoted the FTC's estimate that "U.S. consumers may have paid as much as $480 million more than they should have for CDs and other music because of [the minimum pricing] policies over the past three years." According to the Recording Industry Association of America (RIAA), the total number of CDs sold in 1996, 1997, and 1998 was 2.379 billion. Dividing $480 million by the CDs sold yields 20¢ per disc.

According to the FTC, the settlements it reached with the major record labels "should help restore much-needed competition to the retail music market, consisting of $15 billion in annual sales." Let's see: $15 billion a year for three years is $45 billion, and $480 million is 1% of that. A 1% savings on a CD priced at $15.95 is 16¢. So no matter how you calculate it, the price of a CD will drop from $15.95 to $15.75 (at best). The money is already burning a hole in my pocket.
Ron Schaubman
Parsippany, NJ

Although your math is right, you are assuming that all CDs were overpriced by the same amount. Parties involved with the FTC's investigation told us the pricing policies, which they examined for many years, were complicated and affected certain titles more than others. They refused to disclose any specifics, but it's reasonable to assume that prices of new releases were most affected. These sources also told us that the $480 million figure is "conservative."

New World of Music

I loved Ken Richardson's "Play Me Something I Don't Already Know" (June), about local and underground bands at the South by Southwest conference. It's about time some of these bands got noticed. So many bands out there have so much more talent than the bands you hear on the radio.

Sick of listening to the same old stuff, I turned to the Internet for some new and different music. I downloaded MP3s and recorded them to MiniDisc, and now my favorite bands are ones most people never heard of. The Internet has opened up a whole new world of music. **Jeffrey Clausen**
Cockeysville, MD

Set 'Em Up, Frank

Thank you, Frank Doris, for "The Setup: A/V Receivers" in the June issue. One gem of wisdom concerned "adjustment of the bass signals for the best all-around frequency response." I took your suggestion and changed the setting for my main speakers from "large" to "small." This ran counter to my speaker and receiver owner's manuals, but the result was that the sound of my system changed from merely good to outstanding!
Maurice Shapiro
Sun City West, AZ

A great tip is hard to find, especially one that doesn't have to cost anything! But on page 88 of June's ***Sound & Vision*** I found a really good one in Frank Doris's "The Setup." I have a Carver integrated amplifier connected to a Marantz CD player via Straight Wire cables. Just by untying the neatly coiled wires, I cleared up an annoying fuzziness I'd been trying to track down for some time. Thanks!
Judy Haft
via e-mail

Getting Local DTV

In the May issue, you had a listing of digital TV stations (page 18). Will Dish Network or DirecTV ever broadcast these channels in high-definition (HDTV), or will they be available only via terrestrial broadcast? I need to know so I can buy either an outdoor antenna or go satellite. If they are not available by satellite, can you suggest any particular antenna to receive them? **Richard Galante**
Mentor, OH

Because of their finite channel capacity, it is unlikely that Dish Network or DirecTV will retransmit local DTV channels in high defini-

tion. For hints on choosing an antenna for watching terrestrial broadcasts, see "DTV on the Air," page 124.

A Phish Story

Can someone tell me why members of a mildly popular rock band are qualified to audition speakers? "S&V Sessions" with Phish (July/August) may have filled some need for your writers to meet this band, but how can their opinions on speakers help your readers? These guys have spent decades sitting in front of huge amplifiers at near-deafening volumes. Even a few days of that can seriously damage a person's hearing, let alone years of it. Given that, I would think the members of Phish would be among the least likely people to give advice on speakers. In these days when high-quality audio retailers are dropping like flies, your readers need sound advice from the professionals at your magazine.

Joe Scuderi
Villa Park, IL

Could you speak up a little? . . . But seriously, we have no intention of shunning our responsibility to provide authoritative reviews of home entertainment equipment. The same issue that gave 5 pages to Phish devoted 24 pages to test reports and 17 pages to hardware reviews in the features pages. The "S&V Sessions" we do from time to time are not intended to replace regular test reports. We think we strike a fair balance.

It's decidedly unfair, however, to dismiss the opinions of Phish based on an assumption of hearing damage. Phish came out of the subtle jam-band genre of the late '80s and early '90s, an enlightened time on the subject of hearing loss, and these musicians are no strangers to the benefits of earplugs.

In each "S&V Session," from XTC to Chris Cornell to Phish, the artists have proved to be thoughtful and acute in their perceptions and their comments. After all, if you're using a Phish album as a test disc, who better to evaluate how well a certain speaker reproduces it than the musicians who wrote, recorded, and produced it? As for Phish's being "mildly popular," which part of our story did you miss — that Phish was one of the top-grossing touring bands of last year or that it singlehandedly drew 75,000 people to the Everglades for a two-day festival?

5.1- vs. 2-Channel

Regarding 5.1-channel vs. 2-channel sound, and the comments of reader Chester Barzal in the July/August "Feedback," I suggest that anyone who doubts the benefits of 5.1 channels make a simple comparison: play a favorite song from a DVD movie in both 5.1 and stereo modes. I recently wanted to record a couple of songs from a DVD to CD. The two-channel versions had much less fullness, clarity, and presence than the 5.1-channel versions, even though I played the CD through all of my speakers using my receiver's "5-channel stereo" mode. The difference was simply remarkable. The 5.1-channel format is far superior.

Alan L. Inglis
Las Vegas, NV

Apple's Got Video

June's "World.Wide.Video" was very interesting, and I enjoyed visiting some of the sites listed. But I can't believe the author did not list one of the premier multimedia sites on the Web, www.apple.com/quicktime, except as a source for QuickTime software. It offers film trailers (some of them not available elsewhere), streaming video (such as the Cannes Film Festival live), and, of course, all of the QuickTime TV channels.

Roy C. Gosewehr
Plano, TX

Hard-Disk Wars

While I enjoyed Michael Antonoff's "Hard Disk Wars" (July/August), I believe he has done an unforgivable disservice to the folks at Dish Network/EchoStar by overlooking the DishPlayer 7200. The DishPlayer is comparable in almost every regard to the TiVo and ReplayTV units he reviewed, with one special bonus: it is a three-in-one combo including a hard-disk recorder, a WebTV unit, and a Dish Network satellite receiver offering hundreds of channels of all-digital programming. And it retails for only $399. Having never seen a demonstration of either a TiVo or ReplayTV system, I can't definitively say the DishPlayer 7200 is superior, but I'm willing to bet this underdog can duke it out with either one of the big boys.

Eric Chaffin
Moore, OK

We reviewed the EchoStar 7100 in the July/August 1999 issue. At that time it could buffer only a half hour of programming. Since then the system software has been upgraded so it can save entire programs on an 8.6-gigabyte hard disk, and its replacement, the Model 7200, has twice that capacity. But "Hard Disk Wars" focused on two much larger-capacity hard-disk video recorders that don't have to be used with a satellite service.

A Little Taste, Please!

Seen in the June issue: Muscle men with MP3 players ("MP3 Rumble")? Too much skin! A shadowy magician and his bikini-clad assistant with remote controls ("Magic Wands")? Well, she is pretty cute! We all know that you're trying to reach as large an audience as possible, but please, a little good taste goes a long way.

Charles Snider
Chicago, IL

Download Ethics

I've been a *Billboard* magazine junkie for many years. I currently own recordings of every Top 10 song from 1960 through 2000. I've been transferring songs from my often-played 45s and LPs to MiniDisc to keep them from getting any worse. Then I read about Napster in your magazine and elsewhere. So I logged on and downloaded the program. *Voilà*! There are all the songs I'm trying to save, available free to download. Granted, the MP3 format doesn't come up to CD standards, but it sure as heck beats my transfers from badly worn vinyl.

Since I already bought and paid for the original recordings, I don't feel as though I'm stealing the material. And it's not as if I haven't updated many of the songs to CD, since I also own about 1,600 of those. Where I find Napster especially handy is for the one-hit-wonder artists. It gets pretty tiresome and expensive buying whole CDs just for one song. The ultimate answer is to charge something for the download, a fair price like a dollar apiece for the oldies and maybe a bit more for the current hits. The bottom line is, this is not CD-quality material and doesn't deserve a premium price.

The only reason a program like Napster ever got started is corporate greed. The record labels have steadfastly refused to allow us to download just the songs we want at a fair price. If we like the band, we'll buy the CD.

Nelson W. Rock
Burton, MI

Self-Censoring DVDs

There are some movies I would love to see, but I don't go to R-rated movies. However, I am investing in a home theater system so I can watch these movies at home and skip past the R-rated parts. Why not build this capability into the DVDs, allowing everyone to see a movie regardless of its rating? After all, if we can have an entire movie in Thermian (*Galaxy Quest*), we should be able to have one without the "f" word. Can we *please* get this capability soon? I would like to see, and probably own, *The Matrix*, *Shakespeare in Love*, *Saving Private Ryan*, and eventually *Gladiator* and *The Patriot*. Can someone please help me and the millions like me?

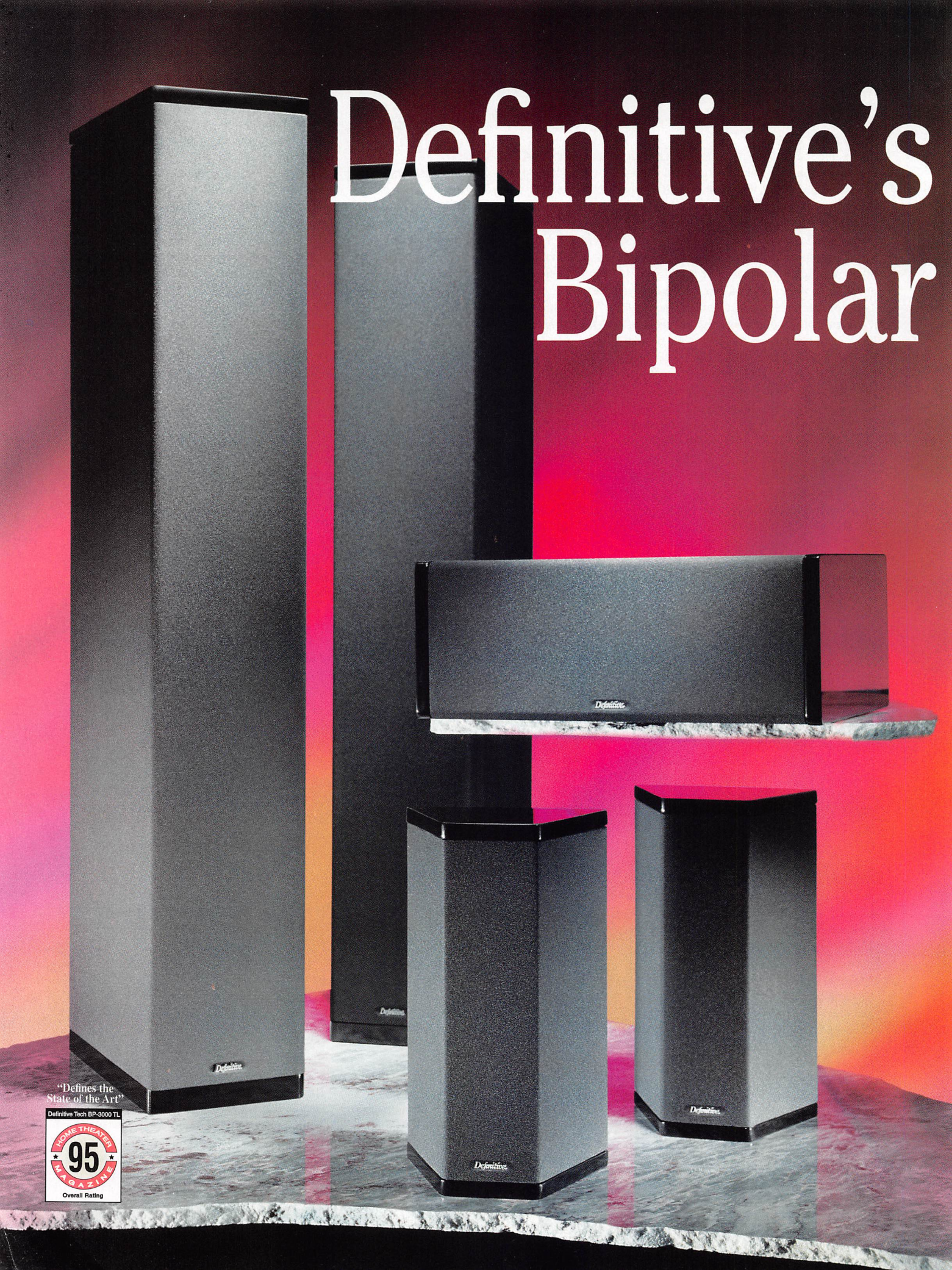
Robert Parker
Salt Lake City, UT

Corrections

"Pool Party!" (July/August) mistakenly omitted credits for those who prepared the (human) models in the illustrations: styling by Desire Konian for Danielle Forsythe, hair by Rick Teal for Halley Resources, and makeup by Daniella Schachter.

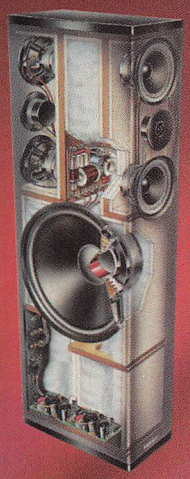
"Track One" (July/August) gave an incorrect Web address for the text of the FTC settlement with the major record labels on CD pricing. The correct URL is www.ftc.gov/opa/2000/05/cdpres.htm. S&V

We welcome your letters. Write to Editor, *Stereo Review's Sound & Vision*, 1633 Broadway, New York, NY 10019; or e-mail soundandvision@hfmmag.com. Please include your name, street address, and phone number for verification; only your name, city, and state/country will be printed.


Definitive's
Bipolar
"Defines the
State of the Art"
Definitive Tech BP-3000 TL
HOME THEATER
95
MAGAZINE
Overall Rating

"Fantastic... Superspeakers!"

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"These speakers are amazing... my universe was shaken"

–Jeff Cherun, Home Theater Magazine

Our extraordinary BP3000TL, BP2000TL, BP2002TL and BP2004 superspeakers and complete matching surround systems all combine our revolutionary bipolar technology with awesome built-in powered subwoofers for ultimate music and home theater!

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– Julian Hirsch, Stereo Review

If you're looking for the finest sounding music and home theater speakers available, visit your nearest Definitive dealer today and listen to our critically acclaimed, award-winning Bipolar Power Towers and complete timbre-matched home theater systems. You'll agree with the world's top reviewers that Definitives are clearly your #1 choice for the ultimate listening experience.

"The grandeur filled the room"

– Rich Warren, Sound & Vision

Experts agree that bipolar loudspeakers are sonically superior to all others for both music and home theater. In fact, top expert Brent Butterworth wrote, "Bipolar systems are as close as we've come to finding the Holy Grail."

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"They are a home theater steal and a music lover's find"

– Fred Manteghian, Stereophile Guide to Home Theater

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"This slammin' system will probably kill any others you've heard"

– Brent Butterworth, Home Theater

In addition to their totally unsurpassed sonic performance, all 8 Definitive bipolar towers (from the $299 BP6B to the top-of-the-line BP3000TL) also deliver absolutely unequalled value. And when you combine them with our perfectly timbre-matched center channels and surrounds, you will have a breathtaking home theater system which, to quote *Video Magazine*, "will make you literally feel like you're part of the movie." You must experience these Grand Prix Award-winning superspeakers today!

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EDITED BY BRIAN C. FENTON

futuretech

DVD-Audio Is Here . . . Again

Really. We promise. . . . Sort of — at least the *players* are here. Six months after announcing it would be first to market, Panasonic finally came through, saying at a press conference in late June that Technics and Panasonic brand players would start shipping to dealers immediately. That same day, Denon, via fax, announced the introduction of its DVD-3300, which was expected to be on dealers' shelves in July. Suggested retail prices range from $1,000 for the Panasonic DVD-A7 to $1,200 for the Technics DVD-A10 and Denon DVD-3300.

The record labels, for the most part, are mum on what their plans are, though we were told some discs "could" be available this fall. It's a good thing all three machines will play DVD-Video as well as DVD-Audio discs.



Sound in a Flash

Imagine listening to your favorite tunes in your car while the passenger beside you hears nothing. Imagine full-immersion surround sound in your living room without any need for multiple speakers. Now imagine it all without headphones, either.

Welcome to the sonic utopia of Joseph Pompei, a researcher at MIT's MediaLab and designer of the Audio Spotlight. When you're in its "sound beam," you hear sound at normal volume; move a couple of feet, and there's silence.

The idea isn't a new one. It emerged from experiments with underwater sonar arrays in the 1960s. By the early '80s, beaming sound was possible but required bulky arrays and also produced as much as 50% harmonic distortion. Now Pompei says he's made it work. His Audio Spotlight is only about a foot in diameter and produces less than 5% distortion, he says.

Pompei claims to have worked out an accurate algorithm for predicting the audible sound that automatically emerges when intense ultrasound beams pass through the air. He says that while the device isn't ready to replace a conventional speaker, "it sounds pretty good for most music, especially when you have a subwoofer."

He may not be in a rush to market yet, but Pompei might be in a race to the patent office. Designers at American Technology Corporation (ATC), a San Diego company, are working on a similar device. Jim Croft, the company's vice president of research, says that ATC has produced transducers about the same size as Pompei's, but they use a different algorithm that reduces distortion to 3% at most.

"He's done some real good work," Croft says of Pompei. "But he hasn't brought anything — at least nothing we've seen presented yet — that's new to the technology." Pompei counters, "From what I've been able to tell, [ATC is] heavily promoting a device that is almost identical to what was done in the early '80s. I don't think there's been any evidence of progress."

Check your equipment, guys. Sounds like there's an echo. — *Peter Pachal*

PHOTO BY RICH FLETCHER

Teach Us, Amadeus

Brian Stokes Mitchell plugged it as he won the Tony for Best Actor in a Musical for *Kiss Me, Kate*. Isaac Stern pleaded for it in a meeting with superintendents of schools. Even someone who not only wanted to be a millionaire but actually became one played for its benefit in a return engagement with Regis. "It" is support for the arts — especially music — in schools. But despite our booming economy, many schools will still find their arts budgets slashed when they reopen in September.

Then again, if your local board can't afford books on, say, Mozart, it can simply book Wolfgang himself for a classroom appearance. Or it can book Beethoven, Joplin, or Gershwin — they're all the same guy, pianist Dennis Kobray, who for the past 15 years has portrayed various composers in his "Meet the Musicians" series. Kobray tailors his school shows for specific age groups, ranging from kindergartners to high-school seniors, and four of his programs are now available on videocassette (with a fifth of Bach due in October). To get a line on Kobray online, visit www.meetthemusicians.com.

— *Ken Richardson*



Radio Becoming Passé?

Maybe not yet. But it will be if it can't attract young listeners — especially teenagers who are developing habits that can last a lifetime. Two recent market-research studies point to radio's decreasing hold on youth. The first, by Edison Media Research, found that the total time 12- to 24-year-olds spent listening was down 11% since last year, while listening by 18- to 24-year-olds was down 14%. What's the leading reason for the drop? Too many commercials, said 75% of those questioned.

A second study, by Empower MediaMarketing, backs up those findings. It found that radio advertising was up 6% last year — after climbing 13% the year before. Alternative-rock stations had the highest increase, classical stations the only drop.

What Was That Song?

Speaking of radio, don't you just hate DJs who babble on without identifying the tunes they spin? Two new devices, Sony's eMarker and Xenote's iTag, can ensure you never get left in the dark again. Each keyring-size gadget lets you "bookmark" songs you hear.

Let's say you're driving along and hear a new tune you don't want to forget. Just click a button on the eMarker or iTag. When you return home, hook it up to your computer, pick the station you were listening to, and retrieve the song title from the Web.

The major differences between the two devices? The iTag works primarily with stations that have signed on to the service, while the eMarker gets its information from the Broadcast Data Systems database. The iTag is free in areas where there are stations that support it (check www.xenote.com for a listing). Sony's eMarker was scheduled to go on sale in late July priced in "the low two digits."

How High Can You Go?

Everyone knows that when it comes to consumer electronics, next year's model will have more features and cost less, right? Well, the new flagship receivers from mainstream manufacturers are defying that conventional wisdom. While they do have more features, new surround formats, higher power, and better overall performance than their predecessors, they cost more, too. Take, for example, the Kenwood VR-4900 ($2,300), the Onkyo TX-DS989 ($3,200; see test report, page 72), the Yamaha RX-V1 ($3,300), and the Denon AVR-5800 ($3,800). The winner in this battle to tip the receiver price scale is Marantz, whose SR-14EX (below) weighs in at a whopping $4,700. Will that be cash or credit?



Who to Believe About MP3?

The Associated Press, reporting on a study by the Pew Internet Project, said that few people are buying CDs of music they obtain online. What AP *didn't* report is that the Pew study also said only 14% of all Internet users download music. Some 79% have *never* downloaded a music file.

Then SoundScan, which tracks record sales around the U.S. (and is the basis of the *Billboard* charts), conducted a study whose data "strongly suggests that online file sharing has resulted in a loss of album sales within the college markets." That was followed by a University of Southern California study that concluded that "MP3 usage among students has not significantly reduced their CD consumption patterns" and that some 10% of MP3 users are buying *more* CDs because of their MP3 usage.

There have also been studies showing that most people won't pay for online tunes (*Rolling Stone*), that more than half of Napster users would pay a $15 monthly fee to use the service (Webnoize.com), and that streaming music got people to buy CDs (Digital Media Association). S&V

15 Minutes with Art Alexakis of Everclear



FRANK OCKENFELS/CAPITOL

"I hate waiting three years to put out a record," admits Everclear's Art Alexakis (left in photo). "I'm old enough to remember when bands put out records every *year." Since it's been exactly three years since this Portland, Oregon, trio went multiplatinum with the alternative-rock juggernaut* So Much for the Afterglow *(Capitol), Alexakis, 38, decided to make up for the wait by putting out not one but two albums in 2000: first,* Songs from an American Movie Vol. 1: Learning How to Smile *(reviewed on page 141); then, later in the fall,* Vol. 2: Good Time for a Bad Attitude *(both on Capitol). And that makes now as good a time as any to get the bandleader's crystal-clear take on the process of making and selling music.* — Mike Mettler

I like the way Vol. 1 is sequenced. For example, you have "AM Radio" right before your cover of Van Morrison's "Brown Eyed Girl," which is an all-time classic AM radio song.

That was definitely on purpose. I'm glad you picked up on it. I'm really proud of how the record flows. It's not really a concept record per se, but it's very thematic. It's like a roller-coaster ride — there are some good things, there are some bad things. Kind of like life.

In "Here We Go Again," that's a sample of Public Enemy's Chuck D saying, "Here we go again," right?

Oh, yeah — I'm a big fan of his. I wanted to use it, and I had heard that Chuck was always cool about people using his stuff. His publishing company hit us up for some money, though.

Chuck D is a big supporter of Napster. Where do you come in on that debate?

I'm cool with the access, but I don't believe that people have the right to [obtain] other people's work without some sort of payment. I don't feel it's fair. We paid for the Public Enemy piece. It wasn't free.

I see buying albums as a way of casting my "vote" for an artist, saying, "Band X, you're worth my money and my time."

That's part of our culture. I mean, if you like the way someone cooks a steak or bakes a cake, then you pay him for that service.

In a way, free downloading suggests a lack of respect for the music's creators: "Well, I can get anybody's work for free. I don't really care if they get paid or not."

You just can't do that. It's theft, and people have to understand that. You know, a lot of kids ask me, "Don't you remember what it's like to be poor?" Yeah, I remember. But even when I was poor, it didn't mean that I went out and *stole* stuff.

Is there any easy solution to all this?

Yeah. Hire the technological whiz kids over to our side and have them figure out some way of encoding the music so that it can't get streamed.

Good idea. I mean, if everybody downloads every song from both of your new albums and nobody buys them, you've got a problem.

Right. Then I can't continue to make music. I'll have to get a job.



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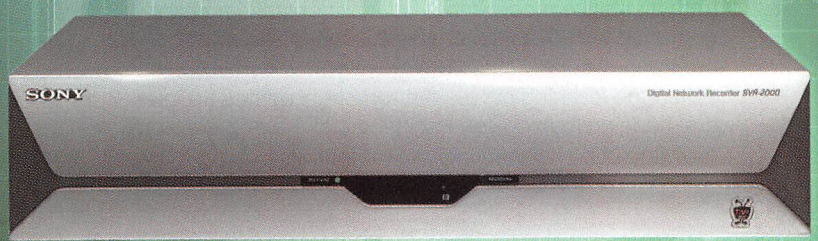


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check it out
sony.com/dnr

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new products

Hot gear from the world of home entertainment

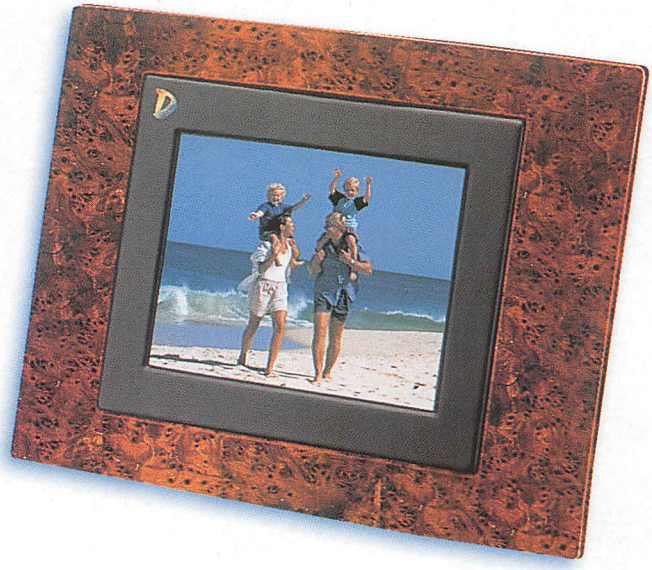


Sony

If you're dying to put those jewel cases in storage, a CD megachanger may be exactly what you need. Sony's CDP-CX450 holds up to 400 CDs, and you can even daisy-chain two changers to select from up to 800 discs. The CX-450 does more than just support CD Text — you can search for discs by the artist's name, and a monitor output allows for onscreen display of up to ten titles at once. And for discs without CD Text, you can input disc, track, and artist names with a PC keyboard. The megachanger has twin jog dials for easy browsing through your collection. The supplied two-way LCD remote control also displays disc titles. Price: $399. (800-222-7669)

Digi-Frame

Forget color inkjets, close up the laptop, and stop lugging your monitor around just to show your digital photos: Digi-Frame's DF-560 digital picture frame is a 5½-inch active-matrix display that can read images directly from CompactFlash and SmartMedia cards. You can also transfer image files from your Mac or PC's serial port via the supplied software and cables, and an onscreen menu lets you view thumbnails and create slide shows with your choice of six wipes and four special effects. Snap-on frames made of burlwood, brushed aluminum, or iMac-inspired translucent plastic (are we tired of this yet?) transform the DF-560 into a stylish, if somewhat expensive, desk piece. Price: $600. (914-937-4090)





RCA

Designed for durability, RCA's new RCU510 "rugged" remote has a membrane keypad and rubber seals that make it easy to clean. It can control up to six devices, from a satellite receiver to a DVD player, and is preprogrammed with Gemstar Guide Plus capability. Multicolored and variously shaped buttons on the contoured shell soften the learning curve. The remote even has an integral hanging loop so you can keep it on a hook, making it easier to find — assuming you remember to hang it up when you're through. Price: $30. (800-336-1900)

For more details on these products, visit www.soundandvisionmag.com/getinfo



Panasonic

You want a big picture but think you don't have the space? Think again, because Panasonic's 52-inch PT-520L10 rear-projection TV is less than 18 inches deep. It produces images at a native resolution of 720p (progressive-scan) using Texas Instruments' Digital Light Processing (DLP) technology. The 16:9 screen can display high-definition programming when the set is partnered with an outboard HDTV decoder. There are composite- and component-video inputs plus a VGA input so it can be used as a computer display with XGA resolution. Price: $12,000. (800-222-4213)



Integra Research

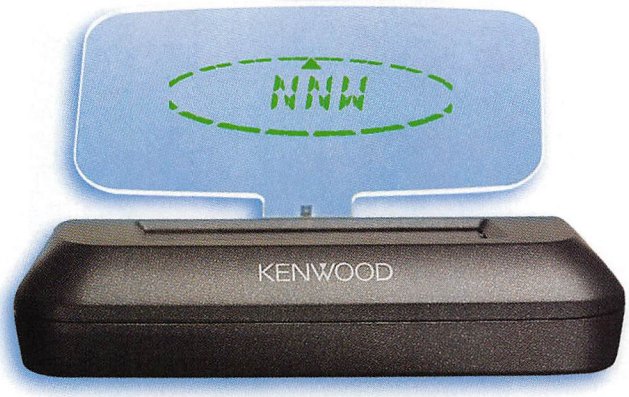
Are 6.1 channels not enough for you? Try 7.1. The Integra Research RDC-7 A/V preamplifier/processor adds two extra rear surround channels to a standard home theater setup for 7.1-channel sound — that is, THX Surround EX with two fully adjustable back surround channels. It's THX Ultra-certified and has a 192-kHz/24-bit digital-to-analog converter with Apogee circuitry said to minimize jitter. The RDC-7's decoders can be upgraded for new formats by installing software through the bidirectional RS-232 port. The back panel has five coaxial and three optical digital audio inputs and six S-video inputs. There are two digital outputs (coaxial and optical), eight balanced XLR outputs, and three S-video outputs. Price: $4,000. (800-225-1946)



KEF

After glancing at KEF's Reference Series Model 3~2 speaker, you might think the engineers forgot to install a tweeter. Relax — a 1-inch ferrofluid-cooled soft-dome tweeter is mounted in the center of the 6½-inch midrange cone at the top of the panel. KEF calls this a Uni-Q array and claims that it improves off-axis response, giving the speaker a broader "sweet spot." Below it is another 6½-inch cone, for the lower midrange, and a large port for the output of two 8-inch woofers mounted back to back inside their own subenclosure. The floor-standing Model 3~2 measures 11⅛ x 44⅞ x 16 inches, weighs 77 pounds, and comes finished in a choice of five hardwood veneers: albina burr (shown), rosetta burr, black ash, cherry, and rosenut. Price: $4,500 a pair. (732-683-2356)

new products



Kenwood

Keeping your eyes on the road while you scan the airwaves with your car stereo is the idea behind Kenwood's KPA-HD100 heads-up display. Set it on the dashboard, and the transparent screen shows the radio station being played or the CD track you're listening to in colorful lettering. It will also display readouts from connected Kenwood accessories such as a compass or thermometer. Price: $200. (800-536-9663)



Outlaw Audio

Setting a new low-price mark for 6.1-channel receivers, Outlaw Audio's Model 1050 can decode Dolby Digital and DTS digital soundtracks as well as Dolby Surround and other matrixed analog surround formats. A custom algorithm designed by Outlaw along with Zoran Corporation handles 6.1-channel decoding for Surround EX-encoded recordings. The Model 1050 is rated at 65 watts each into six channels, all channels driven. It has three S-video inputs, one coaxial and two optical digital audio inputs, and a 5.1-channel input intended for a DVD-Audio source. The AM/FM tuner has 32 presets, and the speaker binding posts are all gold-plated. Price: $599. (800-392-1393)

Jeep

As you might expect from a CD player designed to carry the Jeep name, synonymous with ruggedness, the new Jeep Titanium portable is built to endure punishment. To prevent discs from skipping under all-terrain conditions, the player has both 40-second electronic shock protection and an anti-rolling system. It's powered by two AA batteries and also has built-in recharging circuitry for use with Ni-Cd batteries (not supplied). Price: $100. (800-659-2953)



Philips

Probably breaking the world's record for the most home-entertainment devices in a 10½ x 12¼ x 15½-inch space, the Philips FW-D5 minisystem crams a DVD player, a three-disc CD changer, and a Dolby Digital receiver into one compact package. Three magnetically shielded front speakers, two surround speakers, and a remote control are also included. The amp is rated at 50 watts each into five channels, and the CD changer plays CD-RWs. With a CD in the DVD player, the FW-D5 essentially becomes a four-disc changer, letting you program and shuffle tracks from all four discs. It has S-video and composite-video outputs, and the AM/FM tuner has 40 presets. Price: $599. (800-531-0039)



***NOTE** All prices and product information are supplied by the manufacturers. Dealer prices may vary.*

For more details on these products, visit www.soundandvisionmag.com/getinfo

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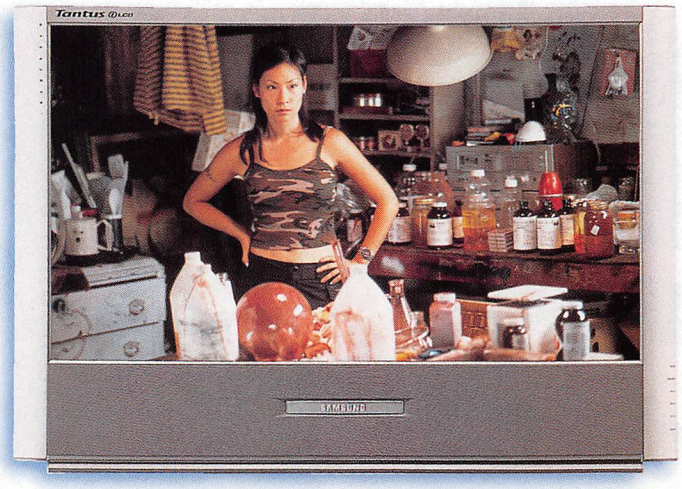
System as shown: Dolby Digital-Ready Amplifier, DVD Player, AM/FM Stereo Tuner, 7-CD Changer

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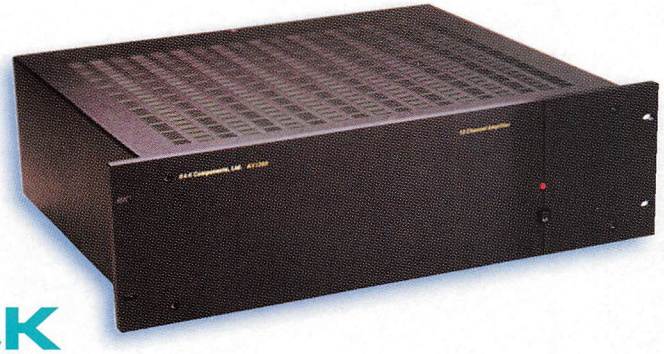


Samsung

The HLK436W 43-inch rear-projection high-definition TV from Samsung features new display technology. The 16:9 widescreen set uses three ferroelectric LCDs that operate at a resolution of 720 x 1,280 pixels. All incoming signals are upconverted to the progressive-scan 720p format. The set has VGA and component-, composite-, and S-video inputs. Other features include a four-speaker Dolby Pro Logic sound system, two-tuner picture-in-picture, and a universal remote control. Despite the set's size, it weighs less than 70 pounds and can fit on a 17-inch-deep shelf. Price: $5,999. (800-726-7864)

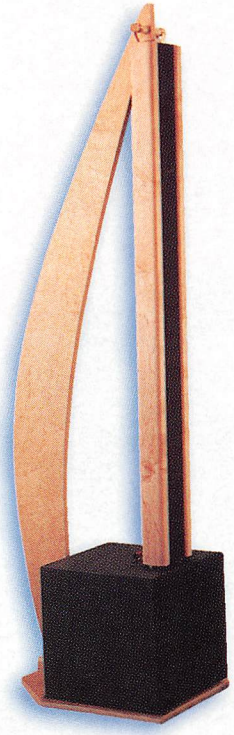
Soundline Audio

Sure to spice up the décor of your listening room, Soundline Audio's SL-1 ribbon speaker stands 70 inches tall and uses an unenclosed 52-inch ribbon transducer for high frequencies. Bass is handled by an 8½-inch woofer in the 13½ x 23-inch base. The 65-pound speaker has a rated frequency response of 40 Hz to 20 kHz ±3 dB. Price: $2,695 a pair with maple, oak, or black oak hardwood trim; $270 extra for zebrawood if available. (909-789-5714)



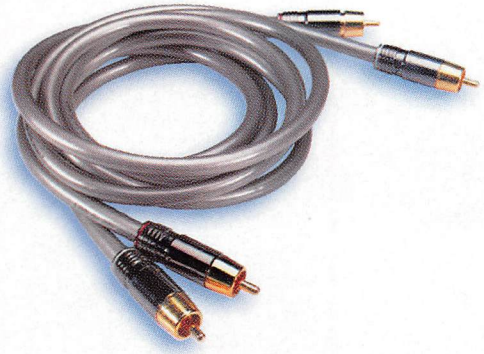
B&K

Directing audio to any room in your house is easy with the B&K AV1260 multizone 12-channel amplifier. B&K's engineers designed it to be simple yet versatile: each pair of channels has four DIP switches on the back panel that let you send either mono or stereo signals to up to six rooms. The AV1260 is rated at 60 watts per channel into 8 ohms at 1 kHz. Signal-sensing circuitry allows each channel to be set to turn on automatically when it detects a signal. Price: $1,700. (800-543-5252)



Linn

With Linn's Silver Interconnects, you can hook your amp to your source equipment through a veritable treasure of gold, brass, and copper. The Silver Interconnects are sold in pairs in 1.2-meter lengths with phono jacks. The tri-wire cables have two double-wound outer screens of soft copper surrounding the inner copper conductor, terminated with solid brass, gold-plated pins in Teflon insulators. The cable and plugs are also available separately from Linn to accommodate custom lengths. Price: $300 a pair. (888-671-5466)



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Sonance

Simple and direct — that's The Sub by Sonance, a THX Select-certified 150-watt subwoofer designed to mate with a Sonance Cinema series speaker system in small rooms. Measuring 15 x 19 x 19 inches, The Sub has a 12-inch dual-voice-coil woofer, a vented cabinet, and a rated frequency response of 30 Hz to 150 Hz ±3 dB. You can adjust the crossover frequency, volume, and phase with controls on the front. Price: $799. (949-492-7777)



PS Audio

Want to clean up the AC power from your wall outlets so your A/V equipment gets nothing but a crystal-clear, smooth signal? PS Audio's 600-watt P600 Power Plant is said to eliminate noise, distortion, and routine voltage fluctuations as well as protect against voltage surges and spikes. You can adjust its output frequency from the regional standard (60 Hz in North America) to as high as 120 Hz, optimizing the power signal for your system. An optional Multiwave feature will feed your system with a close approximation of a square wave, which PS Audio says is the best signal for a power supply. Price: P600, $1,995; Multiwave upgrade, $250. (877-772-8340)

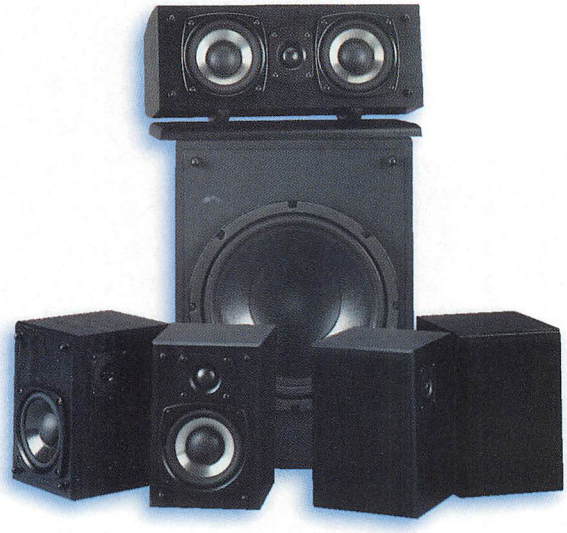
Meridian

Bidding for your high-end audio dollars, the THX Ultra-certified Meridian 568 digital processor decodes all current surround formats. Meridian's own DSP modes are provided for ambience enhancement. Future audio encoding formats don't have to make the Meridian 568 obsolete — it can be upgraded via plug-in cards or software through its RS-232 port. The Meridian 568 is designed to work with the 56V.2 multimedia controller (not shown) as a complete digital A/V preamp/processor with a dozen inputs. Prices: Model 568, $6,495; Model 56V.2, $2,495. (404-344-7111)



Atlantic Technology

With a new surround-speaker design, a 125-watt subwoofer, and a price of $1,000, Atlantic Technology's T 70 home theater system stands out from the crowd. The surrounds' TriVector design combines a forward-firing woofer/midrange driver and two side-firing tweeters to create a diffuse sound field. The front L/R speakers are acoustic-suspension two-way designs with titanium-coated graphite-cone woofers and fluid-cooled 1-inch silk-dome tweeters. You can customize the system for your room by adjusting the sub's crossover frequency and tilting the center speaker. (781-762-6300)



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BEHOLD

DENON'S AVR-5800

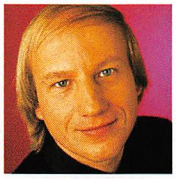


Conspiracy Theory

Everyone thought I was crazy when I stockpiled for Y2K. They chuckled when I bought 200 acres high in the Sierras. They figured I'd gone loco when I built a log cabin up there. And they wet their pants laughing when they found out about the deep underground cellar beneath it. Well, who's laughing now?

I've got a 6,000-watt generator to run all my appliances and draw water from the well, 500 gallons of gas, 300 gallons of propane, 12 cord of tamarack and almond for the wood-burning stove, enough rice, spaghetti, and Spam for 12 months, MREs compliments of the U.S. Marine Corps, $5,000 in gold coins, and beaucoup ammo for the 12-gauge, 30-30, and 357 Magnum. You think I'm joking around?! Well, you just break through the clearing unannounced, and you'll get what's coming to you!

Suppose some record-industry zealot wrote a virus program that erased MP3 files and unleashed it.



Okay, I have to calm down. Deep breaths. Everything's cool — buttoned up, safe and sound. It's the rest of you, down below, who are going to hell in a handbasket. Don't think I don't know what's going on down there. You're topsy-turvy and plunging off the edge!

You know the end of the world has arrived when Metallica goes to court as plaintiffs instead of defendants. These thrash-metal rockers were the definition of anti-establishment. I always figured their debut album, *Kill 'Em All*, was directed at the record-label executives they relentlessly confounded by openly encouraging fans to tape their concerts and distribute bootleg recordings. Now Metallica is suing Napster, a company founded by a couple of college kids who developed software and a Web site that makes it easy to exchange MP3 files. The band's attorney explained that it's only the commercially released albums they're worried about. That sounds reasonable, but how does Metallica explain their possession of a list of 300,000 Napster users who allegedly downloaded Metallica songs? Are they going to charge 300,000 people with violating federal copyright law? I don't know whether to be hurt because my anti-heroes have sold out, hire an attorney to defend me, or countersue over the explicit lyrics in their *S&M* album.

If Metallica starts suing its fans, then the world's upside down, awaiting total destruction. The ILOVEYOU virus (technically, it's a worm) came damn close to triggering Armageddon. Apparently launched by some idiots in the Philippines, this affectionate e-mail attacked PCs worldwide, erasing or hiding JPEG and MP3 files on hard drives, and then self-propagated by mailing itself to everyone in e-mail address books and also hopping onto the computers of people in the same chat room. The virus is said to have attacked something like 90% of the world's businesses and millions of individual PCs, even penetrating "secure" computers at the Pentagon, the CIA, the U.S. Senate, and the British Parliament. As if that wasn't bad enough, a slew of copycat viruses quickly appeared, such as "Very Funny" and "Mother's Day Order Confirmation," which announced that your credit card had been charged $326.92. Once you clicked on the attachment to find out what the hell was going on, you were infected, and the virus playfully mailed itself to everyone in your address book. Now, you might shake your head, advise me to install virus software, and murmur, "*C'est la vie*."

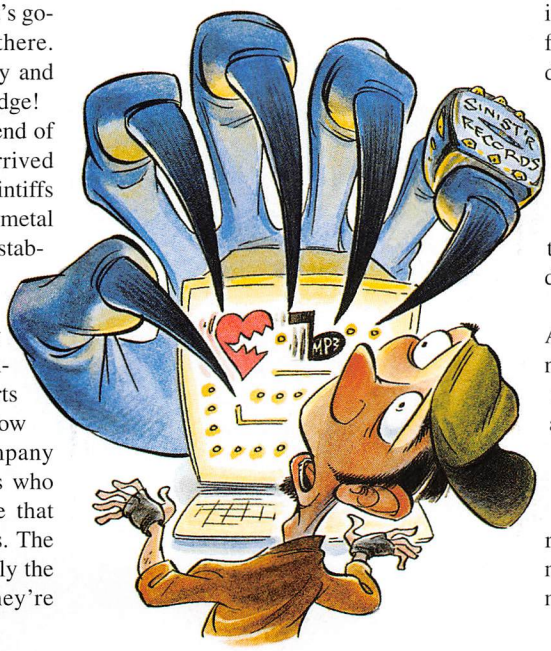


ILLUSTRATION BY DANIEL VASCONCELLOS

You French-speaking nincompoop! Do you think I was born yesterday?! Hell, when you've been up for five days and nights and you've got a shotgun lying across your knees, conspiracies are easy to spot! The virus erases files on your hard drive — including MP3 files! Isn't that damned interesting? Listen to me — the major record labels make huge profits each year. And the thing they hate the most is MP3 files. They would dearly love to wipe the slate clean — do away with all MP3s and start fresh with a secure music file format. Of course, it'd be impossible to erase all MP3 files in the world. Or would it?

Now, I'm not going to make any wild accusations, but let's just suppose that some record-industry zealot took it upon himself to write a little virus program that erased MP3 files (as well as a few others, to cover his true intent) and then unleashed it. *Voilà*! In a few days MP3s are cleansed from 100 million computers, and the industry is ready to sell you all new music. If anyone disobeys and rips new MP3s, nuke 'em again! Now — once again — I'm not accusing anyone of launching cyberattacks for commercial gain. If the record people knew what I was saying, they would take me out faster than I could duck. So don't blab this around!

Well, it really is the end of the world. And while the rest of you networked ninnies all stew in your juices, hiding behind firewalls that aren't worth spit, I'm safe and sound up here in the hills. While you're crashing and burning, I'm as snug as a bug in a rug. Oh — what's this? E-mail from Raul, my good buddy in the record industry. Some kind of joke attachment — he's a real kidder, that Raul. Let me just open it, and see wha . . . S&V

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World's First dts ES Extended Surround 6.1 Discrete:

EXTENDED dts ES SURROUND DISCRETE

The AVR-5800 is the world's first A/V component equipped with dts ES discrete 6.1 decoding, providing dramatically improved surround sound panoramic reproduction and imaging localization. Like dts 5.1 channel surround sound, the Surround Back channel of dts ES 6.1 is provided in a true discrete configuration, providing superb 360 degree surround sound reproduction, with both Music 6.1 and Movie 6.1 surround decoding modes.

World's First dts ES Extended Surround 6.1 Matrix:

EXTENDED dts ES SURROUND MATRIX

dts ES 6.1 Matrix decoding combines dts 5.1 decoding along with dts' own matrix decoding algorithm, to provide outstanding 6.1 reproduction of dts ES-encoded 5.1 sources. Unlike other components that combine dts 5.1 with a "generic logic" function to extract the surround back channel information, the AVR-5800 is the world's first to incorporate dts 5.1 decoding combined with dts-developed high accuracy matrix algorithm for optimum dts ES 6.1 matrix decoding.

World's First dts Neo:6 Matrix Decoding:

EXTENDED dts ES SURROUND Neo:6

Featuring the newest dts matrix technology, the dts Neo:6 matrix decoding function provides up to 6.1 channel surround sound from conventional stereo sources such as CD, tape, FM, TV or any other analog or digital stereo source. Two modes are provided: Neo:6 Cinema for movie soundtracks and Neo:6 Music for stereo music sources.

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THX Surround EX and THX Ultra Certified:

In addition to the left surround and right surround channels, THX Surround EX derives a surround back channel from EX-encoded programs, and also features Lucasfilm THX re-equalization of the surround back channel, along with time delay and bass management functions. Proudly bearing the THX Ultra logo, the AVR-5800 satisfies the strict standards of Lucasfilm's THX Ultra certification requirements governing performance, features, surround processing accuracy, fidelity, stability into low impedance speaker loads (even down to 3.2 ohms), and ease of operation. In addition, THX 5.1 and 4.0 post-processing enhancements enrich the motion picture soundtrack reproduction, providing timbre matching, re-equalization, precision time delay control, dynamic surround decorrelation and superior bass management.

7 Channels Of THX Ultra-certified Amplification. 170 Watts Per Channel:

The AVR-5800 features an equal power 7-channel amplifier section, with identical amplifier design on all 7 channels. High current, low impedance drive-capable discrete power transistors are used for each channel, with THX Ultra-certified performance into virtually any speaker combination, optimized for superb fidelity and dynamic range with demanding motion picture and music multi-channel sources.

Dual 7.1 Channel External Inputs:

Prepared for the future, the AVR-5800 is equipped with not one, but two 7.1 channel external inputs, providing full future format upgradeability. You can connect up to two multi-channel sources, such as DVD-Audio and another future multi-channel source at the same time.

Plus:

- Denon's exclusive ALPHA 24 bit DSP processing with 16-24 bit stereo digital audio sources.
- 9 assignable digital inputs, plus 1 for laser disc (AC-3 RF demodulator).
- 3 sets of component video inputs for highest quality video sources. 8 Video inputs with composite and "S" video switching.
- Dual Surround Mode speaker switching; 1 pair for movie surround, 1 pair for music surround.
- 2 Multi-zone outputs. Multi-zone 1 provides stereo audio and composite video to a second zone, and Multi-zone 2 provides stereo audio to a third zone.
- IEEE 1394 Firewire prepared. RS-232C serial port for connection to external whole-house control systems.



aktis

Comes With Denon's Aktis RC-8000 Remote Control System:

It's a new freedom. Denon's Aktis RC-8000 remote control system lets you control your home theater and other-zone components from anywhere in your home! With both infrared (IR) and radio frequency (RF) capabilities, the versatile and powerful LCD touchpanel learning remote, you can control up to 23 different devices right through walls. Easily modify, edit and update the backlit LCD touchpanel – even activate a sequence of system startup and shutdown commands at the touch of a button. The RC-8000 LCD touchpanel remote and RC-8001ST charger/RF base station are supplied with the AVR-5800.

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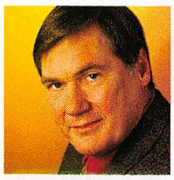
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Shopping Confusion

Q. *I'm about to spend a fair sum of money to upgrade my system and don't want to be stricken with buyer's remorse. Because A/V systems and components change almost as fast as new computers do, I can't seem to get focused on what I should purchase. Any suggestions?*

Howard Rosenbloom
Brandon, MS

A. A bewildering array of new equipment does come on the market every month, and new technologies do emerge, but what you buy today isn't likely to become obsolete overnight. When TV first became a big deal, my father decided to hold off buying a set until it was "perfected." But he soon got tired of doing without and bought a TV, which I still used occasionally in my home some 30 or more years later.

Of course, things are changing much faster today. The best strategy is to buy what you need now, but with an eye toward upgrading later on. Dolby Digital isn't going to go away anytime soon, so a component that handles that format will be usable for a long time. And buying an A/V receiver with an external 5.1-channel input (in addition to built-in Dolby Digital and DTS decoding) will help you to accommodate new multichannel-audio delivery systems that come along.

Amplifiers and speakers haven't changed a lot recently, so whatever you choose should work fine for years to come. Even mature technologies like VHS tape and CD, which already have their replacements waiting in the wings, aren't likely to disappear from the shelves soon. And if they do, you'll still want to enjoy the recordings you already have.

So determine what capabilities you want now, or in the near future, and shop for those. New wrinkles will inevitably come along, but that doesn't mean you have to get them immediately. In the meantime, take advantage of what's out there today.

DLP Projection

Q. *I'm ready to buy a large-screen HDTV, but I'm wondering if I should wait until the rear-projection sets that use Texas Instruments' digital light processing (DLP) system are introduced later this year. What are the advantages of DLP?* **Steve Beier**
Madison, WI

A. Brightness, mostly. An engineer with a company that sells DLP professional equipment told me that the highest-rated DLP front projectors have a maximum



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brightness of 12,000 ANSI lumens (the standard measure of brightness), as opposed to 10,000 lumens for an open-gate movie projector (one with no film in it) and 250 lumens for a CRT-based projector. While the differences won't be as great in consumer rear-projection sets, they could still be substantial. The cost differential will probably be fairly wide for some time to come, however, so unless you're willing to wait for the price of DLP-based rear-projection TVs to come down — or can afford to pay top dollar — I'd recommend going with a current CRT model.

Using Existing Amplifiers

Q. *I'm debating how to supply power to my home theater system. I already have three two-channel amps with power ranging from 100 to 225 watts per channel. Should I buy a good three-channel amp and mate it with one of these amps plus a preamp to drive a five-channel system? How important is it for all five channels to have the same power rating?* **Stuart Fan**
Norwalk, CT

A. Why bother with another amplifier at all? You already have six channels, and nothing says you have to use all six. If you haven't already bought a powered subwoofer, you could get a passive one and use the sixth channel to drive that. You'll have to be careful to match levels, but your existing amps should work fine.

Some people think all the channels in a discrete surround system should have the same power, but that's mainly because in many earlier systems the surrounds and sometimes the center were underpowered compared with the main channels. But as long as you have enough power in each channel, they don't have to be identical. I'd say the minimum of 100 watts a channel you have should be plenty, and having extra power in some channels doesn't matter if you never use it.

Cable Lengths

Q. *A local A/V dealer told me that all of my speaker cables should be the same length. For instance, if my left speaker run is 10 feet and my right speaker run is 15 feet, all of the cables should be changed to 15 feet. It follows then that if one of my rear speaker runs is 20 feet, all five runs should be 20 feet! Is this necessary, or is it just more hi-fi voodoo?* **Vincent Lo Presti**
Huntington, NY

A. Good theory, bad science. When you consider that the signal passes through the wire at virtually the speed of light (or at a bit less than a billion feet per second!), a few feet of wire more or less can't make much of a difference. There might be slight variations in resistance and capacitance between cables, but unless the runs are extremely long, these should have only a negligible effect.

Extra Inputs

Q. *I'm thinking about buying a DVD-ROM drive that comes with an MPEG decoder card having composite- and S-video outputs. I then want to hook up the computer to my TV through the set's composite-video input, but that's being used by a VCR. I know I can't hook up the DVD drive to the video inputs on the VCR because DVD copy protection will scramble the picture. Is there another solution short of buying a new TV with more video inputs?*
Martin J. Dalziel
Calgary, Alberta

A. Try feeding it through the VCR. Some VCRs *will* pass a DVD signal through as long as you're not recording. In that case, you still won't be able to tape a DVD, but

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Jane says, "Surprise!"
See Dick say, "Cool, but we already have an awesome Sony DVD player."
Jane says, "Well, this one includes a 5.1 channel digital amp with lots of power."
See Dick curious.
Jane says, "...and five satellite speakers and a subwoofer,"
See Dick really curious.
Jane says, "...with built in Dolby Digital and DTS decoding,"
See Dick impressed.
Jane says, "...plus, it's a snap to set up. Let's do it now,"
See Dick happy.
Jane says, "...and it's going in the bedroom."
See Dick very happy.
See Jane wink.
See Dick smile.
See Dick and Jane enjoy their DVDs happily ever after.



The All-In-One, Ultra-Compact Sony *DVD Dream* System...Simply Beautiful.

you will be able to watch it. If that doesn't work, buy a passive video switcher, which is designed to accommodate multiple sources. Or if you're contemplating using an A/V receiver to extract digital surround sound — a reasonable expectation — you can do your switching through the receiver.

Impedance Matching

Q. *My speaker system is rated at 4 ohms impedance for the front left/right and center, and 6 ohms for the surrounds. Can I hook it up to a surround amplifier with a rated minimum impedance of 6 ohms?*

Hadzri Hashim
Brunei

A. This is one of the most frequently asked questions. In general, using speakers with lower impedance than the amplifier was designed to handle will increase the current drain and possibly damage the amplifier. This is especially true if you run more than one set of speakers from an amp, which can cause impedance to drop to dangerously low levels. You can expect a reasonable amount of tolerance when driving a single speaker from each amplifier channel, however. A speaker's impedance rating, although typically expressed as a single number, usually falls far short of describing that speaker's behavior. Impedance varies with frequency, and while that means it might be lower than the spec at certain parts of the spectrum, it will also be higher at other frequencies. In any event, the difference between 4 and 6 ohms is small enough that I doubt you'll run into any problems.

Grilles for Speakers

Q. *When speakers are shown in* **Sound & Vision** *and other magazines, sometimes the grilles are in place and sometimes not. Which is preferable?* **Gabriel Gonzalez**
Miami, FL

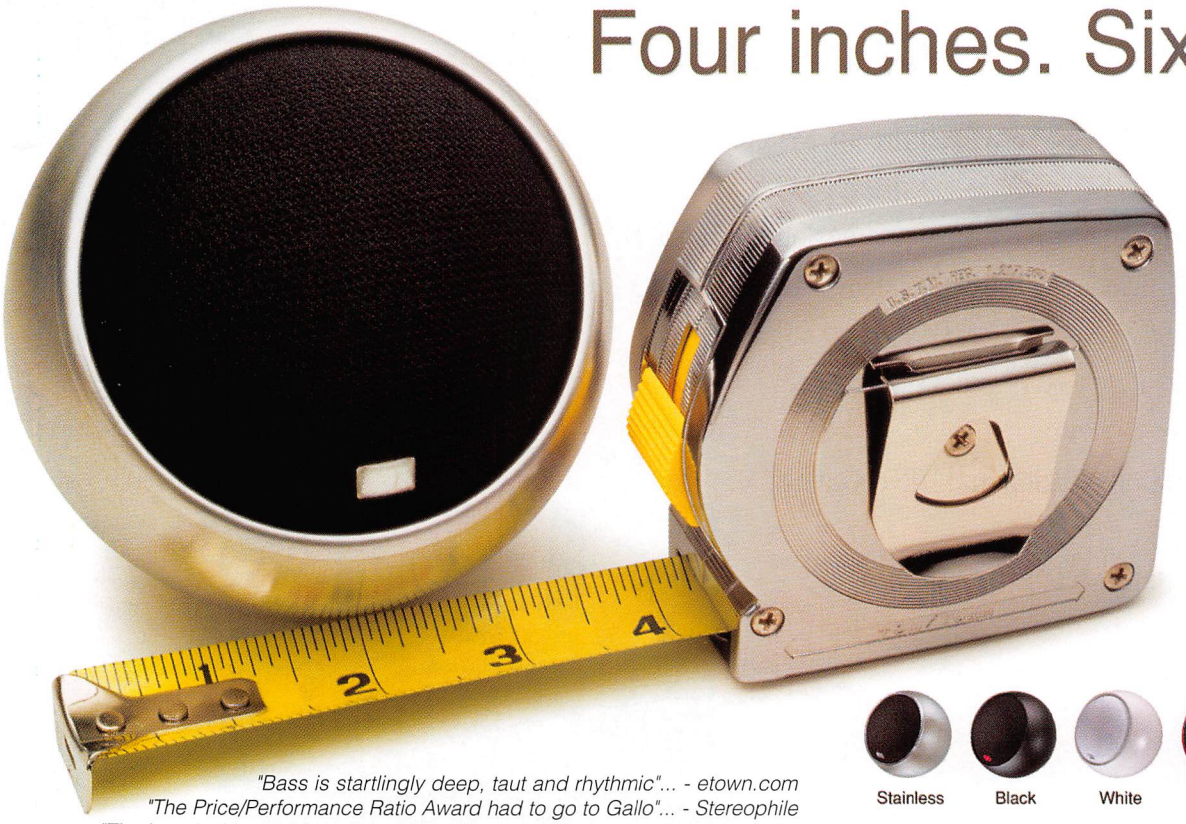
A. For subwoofers and the woofers in full-range speakers, it doesn't matter very much. The wavelengths they produce are so huge in relation to the thickness of a grille cloth that they won't be impeded at all. When it comes to higher-frequency drivers, especially tweeters, opinions are divided. One faction insists that nothing should get in the way of the sound, and to cater to this group, most speaker manufacturers now finish the front surfaces of their enclosures so they will look as attractive as possible without the grilles.

However, we've had grille material for decades that is as acoustically transparent as you'd ever want. Unless the manual says otherwise, you can assume the speaker was designed to be listened to with the grille *on*. Some grilles interact with the drivers in a beneficial way, either improving dispersion or reducing diffraction.

If you like the look of naked drivers, fine, but if you (or other members of your family) prefer a less techie appearance, don't hesitate to leave the grilles on. S&V

If you have a question about audio, video, or home theater, write to Q&A, *Sound & Vision,* 1633 Broadway, New York, NY 10019; e-mail, soundandvision@hfmmag.com. Be sure to include your name, street address, and phone number for verification; only your name, city, and state/country will be printed. Sorry, but only questions chosen for publication can be answered.

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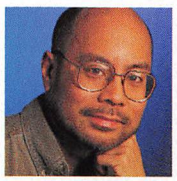
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Cart Before the Horsepower

Probably no equipment spec is more sweated over than an A/V receiver's output-power ratings. Consumers and manufacturers alike do the sweating, since the latter know that the former tend to fetishize power specifications and lab measurements. To judge by the traffic on Internet forums covering home theater equipment, buyers are choosing 100-watt-per-channel receivers based on test results that show differences in measured maximum output of as little as 15 watts. But this is putting the cart before the horse in terms of perceivable differences in sound quality.

The problem with the watt is that it's a linear unit of measurement, but we *hear* logarithmically.



The scientific definition of "power" is the rate at which work is done. In this case, the work being performed is moving speaker diaphragms in response to audio signals. Amplifier power is conventionally given in watts (W), named after James Watt of steam-engine fame. There are other scientific units of power that could also be used, such as the mellifluous foot-pounds per minute (fp/m). My favorite unit is horsepower (hp), one of which equals 745.7 W.

I think it would be cool if amplifier power were given in horsepower (hp) instead of watts. Nearly all amplifiers and receivers would then be rated at less than 1 hp per channel, with very few producing more than 1 hp even with all channels driven. The smallness of the numbers and their differences would tend to downplay their importance (except to baseball fans, who are used to flying into heated debates about player statistics that differ only in the second or third decimal place).

The problem with horsepower is that, like watts and foot-pounds per minute, it's a linear unit of measurement, but we *hear* logarithmically. This means that if you double an amplifier's output measured in watts or horsepower, the result will *not* be heard as being twice as loud (a nebulous concept to begin with), as you might expect, but as a much smaller increase in volume. The logarithmic nature of our perception of sound volume has long been recognized and is enshrined in the decibel (dB), a logarithmic unit that equals one-tenth (deci-) of a bel, named after Alexander Graham Bell, inventor of the telephone.

Converting from the linear wattage scale to the decibel scale is a simple mathematical procedure. The formula, if you have a scientific calculator, is: decibel difference = 10 times the logarithm (base 10) of the ratio between wattages. For example, to find the difference, in decibels, between the maximum output level of a 125-watt receiver and that of a 100-watt receiver, calculate their power ratio (1.25), take its logarithm (0.09691) and multiply by 10, yielding 0.9691 dB. Here, a 25% increase in power has led to an increase in maximum output level of less than 1 dB, or a barely audible difference.

Amplifier output in watts	Decibels above 1 watt (dBW)
60	17.78
65	18.13
70	18.45
75	18.75
80	19.03
85	19.29
90	19.54
95	19.78
100	20.00
105	20.21
110	20.41
115	20.61
120	20.79
125	20.97
130	21.14
135	21.30
140	21.46
145	21.61
150	21.76
155	21.90
160	22.04
165	22.17
170	22.30
175	22.43
180	22.55
185	22.67
190	22.79
195	22.90
200	23.01

Our example, in fact, demonstrates a helpful rule of thumb for converting wattage comparisons to decibel differences: a 25% increase in wattage is about the same as +1-dB change in level. A possibly more helpful conversion method is to use the table printed here. In the left column are amplifier wattage ratings from 60 to 200 watts in 5-watt increments, and on the right these are converted into yet another unit, the dBW, or decibels referred to 1 watt (that is, above a 1-watt level). Here it is the difference in output level between an amplifier with one of the power ratings in the lefthand column and an amplifier delivering only 1 watt. You can see that to obtain an *audibly meaningful* increase in maximum output (say, 3 dB), you have to *double* the power.

The dBW unit is also useful in estimating the actual maximum sound-pressure level (SPL) you can get with a given amplifier/speaker combination. Just *add* the dBW figure to the speaker's sensitivity rating, also in decibels. For example, a speaker rated to deliver 90 dB SPL at 1 meter with a 1-watt input (equivalent to 2.82 volts into 8 ohms) will play at a very loud 110 dB SPL at 1 meter when driven by an amp delivering a maximum of 20 dBW per channel (100 watts) — assuming that the speaker can actually play that loud. Working backward, you'd need a speaker with at least an 85-dB sensitivity rating to obtain 105 dB SPL using a 20-dBW amplifier.

The dBW unit has been around for about 20 years but has found little acceptance despite its usefulness in gauging both relative amplifier performance and absolute sound levels produced by amplifier/speaker combinations. With this issue, however, ***Sound & Vision*** is now publishing amplifier and receiver test reports with power measurements both in watts and in the calculated dBW equivalents. And just so the new unit isn't fetishized, too, the figures will be rounded off to the nearest half dBW! S&V


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test report BY AL GRIFFIN

MartinLogan

Scenario Home Theater Speaker System



PHOTO BY TONY CORDOZA

Knowing a good thing when they spotted one, mainstream speaker manufacturers greeted the arrival of home theater with outspread arms, falling over themselves to accommodate the exploding demand for six-piece speaker packages. In contrast, high-end speaker companies were late to the party. Blinded by stereoscopic vision, or perhaps a lack of enthusiasm for movies, many high-end speaker manufacturers have only recently tossed their hats into the surround sound ring.

MartinLogan is an exception. The Kansas-based manufacturer of electrostatic speakers featured a center-channel model in its line as far back as 1993. And while the company continues to push the outer limits of audio exotica (its flagship, the Statement, sells for $70,000 a pair), it has also made overtures to the mass market by designing a series of lower-price electrostatics. The home theater system I reviewed consists of two such models, the Scenario ($1,995 a pair) and the Script ($1,695 a pair), packaged with the company's $1,295 Cinema center-channel speaker ($1,495 with stand). That adds up to about 5,000 bucks. To most people, that's a lot of money to spend on speakers, but then again, this isn't your average system.

Conventional dynamic speakers translate electrical signals into sound by first turning it into kinetic energy that moves some combination of cones and domes. Electrostatic speakers, in contrast, move air with large, flat, microscopically thin, and electrically charged diaphragms suspended between pairs of charged metal "stators." An electrostatic speaker needs to be plugged into an AC outlet, and the signal from the audio amplifier is fed to the diaphragm. Variations in the signal voltage from the amp pull the diaphragm closer to one stator or the other, which moves air and produces sound. Since the diaphragm is driven uniformly over its entire area, an electrostatic speaker has the dual advantages of low distortion and lightning-fast response to transients. It's also a natural dipole, radiating equally and in opposite phase front and back.

The drawback to the electrostatic approach is that you'd need a massive diaphragm to reproduce bass frequencies — a problem MartinLogan sidesteps here by combining the panel drivers with conventional woofers. This hybrid approach permits the speakers to have attractively slim profiles.

The pair of Scenarios that handled the front left/right channels in the system I reviewed are the most striking speakers I've laid my eyes on in some time. Each speaker stands approximately 4 feet tall, with a sealed cabinet containing an 8-inch woofer occupying about half that height. The steel electrostatic-panel assembly is joined to the front of the woofer cabinet and curves slightly in an effort to widen the speaker's horizontal dispersion.

The Scenario's front-firing 8-inch woofer, which crosses over to the panel at 500 Hz, is rated down to a modest 45 Hz, so unless you're stuck on a strict diet of dialogue-heavy Merchant-Ivory period movies, you'll want to add a separate subwoof-



The MartinLogan speakers managed to create order from cacophony in the *Three Kings* DVD soundtrack and should play as loud as needed in any system with a good subwoofer.

er to augment the bottom end of music and movie soundtracks.

MartinLogan recommends its Script speakers for surround use. These are designed for wall mounting and come with brackets that permit 180° rotation so you can adjust them for either direct or diffused sound. Standing 43 inches tall, the Script combines a relatively small electrostatic panel with a bass module containing a 6½-inch woofer that plays down to about 70 Hz. Since small panel-type speakers like the Script have limited vertical dispersion, for the best results you need to mount them so your ear is about level with the panel's midsection.

If, like me, you feel that most center speakers look like small coffins sitting on top of your TV, you'll appreciate MartinLogan's Cinema. With its swooping, concave face, it has an aerodynamic appearance quite unlike any other center speaker. The Cinema and its big brother, the Logos, are also the only models in the MartinLogan line that use a conventional dome tweeter to handle highs. Below 3.5 kHz the Cinema's 27-inch electrostatic panel kicks in, and it crosses over at 300 Hz to a pair of 5¼-inch woofers mounted in separate sealed subenclosures at the speaker's left and right ends.

I set up the MartinLogan system in ***Sound & Vision***'s home theater testing facility, a 36 x 18-foot room with a 12-foot ceiling. Since that's on the large side, I was worried at first that the relatively diminutive MartinLogan speakers wouldn't be up to the task of filling the space with sound. Happily, that wasn't the case. Still, as I already mentioned, the system really needs a subwoofer, particularly in a medium to large room. For my evaluation I paired it with B&W's ASW 3000 ($1,500), a 300-watt powered sub with a 15-inch driver that can pump out some serious bass.

Before I plugged in the B&W, however, I spent some time listening to the Scenarios alone, without a sub. On *The Hidden Treasure*, a piece for string quartet from a CD of works by the contemporary British composer John Tavener (*Byzantia*, Virgin Classics 45352), I had the opportunity to experience firsthand the thrilling sense of "presence" that electrostatic speakers are renowned for. I could hear delicate details, like the scraping of the bow against the violin strings, and when the layered interplay between violin and cello kicked in during the piece's second half, the imaging was so sharp I felt I could pinpoint the respective instruments.

On the more complex *Angel* from Massive Attack's *Mezzanine* CD, the Scenarios projected the song's incredible sense of spaciousness. The nice balance between the visceral bass layer, the low, breathy vocals, and the higher-pitched percussion showcased the Scenario's seamless integration of woofer and electrostatic panel. But I soon missed the ultra-low bass I know this song contains. After I introduced the B&W subwoofer into the mix, dynamics improved quite a bit, but it took considerable experimentation to find a volume setting and room placement that let it blend smoothly with the Scenarios.

The finely detailed, almost tactile presentation that I experienced with the Scenarios was repeated with both the Script surrounds and the Cinema center speaker, which makes this MartinLogan system excellent for multichannel music. Listening to (and watching) Sheryl Crow's live performance of *Am I Getting Through* from the *DTS Demonstration DVD #4* (available from www.dtsonline.com), a fine 5.1-channel music mix save for the disconcerting placement of percussion instruments hard in the surround channels, I had a sense of being dipped into the center of the concert crowd. Crow's raspy voice sounded pleasantly full and crisp from the Cinema center speaker.

One problem I've noticed with center speakers is that they sometimes "box in" the dialogue: you can actually hear the voice being projected from the speaker location, whether above or below the TV screen. But when I turned to DVD movie soundtracks, my attention wasn't drawn to the Cinema speaker's location at all. In every movie that I watched, the dialogue seemed to float effortlessly from the middle of the screen itself.

The Cinema's clear and coherent presentation was an asset in scenes with a complex sound mix spread across the three front channels. In *Three Kings*, for example, Conrad (Spike Jonze) opens a car door while being fired at from above by Iraqi soldiers. On the soundtrack you hear whizzing bullets, shattering glass, a car alarm, and, underneath it all, Chicago's radio staple "If You Leave Me Now." Somehow the MartinLogan trio managed to create order from this cacophony, preserving the music track's integrity while rendering the spatial cues of the sound-effects layers.

As the bullets and mortar really started to fly toward the DVD's end, however, I noticed a slight amount of dynamic com-

fast facts

	SCENARIO (L/R front)	CINEMA (center)	SCRIPT (surround)
HIGH/MIDRANGE DRIVER	electrostatic panel	1-inch dome tweeter and electrostatic panel	electrostatic panel
WOOFER	8-inch cone	two 5¼-inch cones	6½-inch cone
ENCLOSURE	sealed	sealed	sealed
DIMENSIONS (WxHxD)	10 x 47 x 15½ inches	33½ x 8 x 10½ inches	10 x 43 x 9 inches
WEIGHT	55 pounds	28 pounds	27 pounds
FINISH	matte black	matte black	matte black
PRICE Total: $4,985	$1,995 a pair	$1,695	$1,295 a pair

MANUFACTURER MartinLogan, Dept. S&V, 2101 Delaware St., Lawrence, KS 66046; phone, 785-749-0133; Web, www.martinlogan.com

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pression during loud peaks, like explosions and gunshots. Granted, this occurred only at volumes most people would consider absurdly loud. My overall impression was that these speakers should be able to play as loud as needed in any system with a good subwoofer sharing the load.

Six-speaker systems costing $1,000 or less have become the mark most manufacturers are trying to hit lately. In that dog-eat-dog environment, systems that cost substantially more need to offer something special in terms of either performance or aesthetics to justify their price. Even without a subwoofer, MartinLogan's Scenario home theater system delivers on both counts. Its unique looks are sure to satisfy listeners who care about styling, while its hybrid dynamic/electrostatic design yields a refined sound that's a clear cut above what you'll hear from your average home theater speakers. If you're in the market for a serious home theater setup and have a yen for something different — something special — this MartinLogan system is sure to satisfy you. **S&V**

in the lab

FREQUENCY RESPONSE (at 2 meters)
front left/right .....65 Hz to 20 kHz ±6.0 dB
center .....92 Hz to 20 kHz ±3.7 dB
surround .....110 Hz to 20 kHz ±4.3 dB

SENSITIVITY (SPL at 1 meter with 2.8 volts of pink-noise input)
front left/right .....89.5 dB
center .....86.2 dB
surround .....88.1 dB

IMPEDANCE (minimum/nominal)
front left/right .....2.2/10 ohms
center .....4.6/10 ohms
surround .....3.4/10 ohms

BASS LIMITS (lowest frequency and maximum SPL with limit of 10% distortion at 2 meters in a large room)
front left/right .....32 Hz at 72 dB
center .....50 Hz at 70 dB
surround .....50 Hz at 76 dB

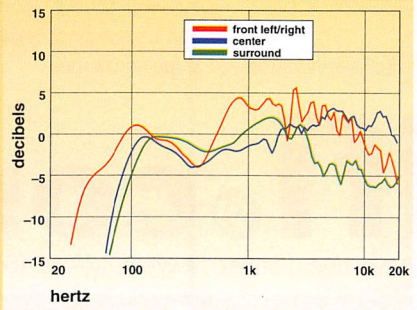
All of the frequency-response graphs and measurements have been weighted to reflect the way sound arrives at a listener's ears in typical listening positions and with normal speaker placement. The Scenario front left/right speaker was averaged over a ±30° window, with double weight given to the most common listening angle, 30° off-axis. As a tower speaker, it will always be used on the floor, so it was measured that way. The Cinema center speaker's response was averaged over ±45°, with double weight directly on-axis. The Script surround speaker's response was averaged over a ±60° window, with double weight 60° off-axis because most sound arriving at listeners' ears will have been reflected from room surfaces.

In a small room users can often expect 2 to 3 Hz better bass extension and up to 3 dB higher maximum bass level. Because tower speakers like the Scenario will always be used as a pair, users can expect 3 to 4 dB higher total SPL than a single speaker could produce.

All three of these speakers had fairly significant response differences as the radiating angle changed, which our averaging techniques downplay in the graph curves. All three also displayed a mild depression between 300 and 600 Hz, which was probably caused by the crossovers between the electrostatic panels and the cone woofers.

The Scenario's response was elevated from 600 Hz to 2 kHz, but response above 2 kHz tended to roughen and fall significantly at wider radiating angles. The Script had a similar character, but the high-frequency rolloff at wider angles was correspondingly greater. The Cinema had a relatively smooth, gently rising response directly on-axis, but when measured 22.5° off-axis on either side it developed a deep notch at 4 kHz, which widened at greater listening angles. This is quite common with speakers that are horizontally oriented no matter what kind of drivers are used.

All three had unusual impedance characteristics. Both the Scenario and Script dropped to low impedances at the top of their operating ranges, where only the electrostatic panels were operating — values low enough to warrant care if these speakers are used with an old amplifier or receiver. The Cinema's impedance, in contrast, bottomed out at 166 Hz because it has a dome tweeter. — *Tom Nousaine*



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DE - Hi Fi House: Wilmington.
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GA- Access DVD: Atlanta• **Audio Warehouse:** Savannah• **Ken's Stereo:** Macon• **Merit TV:** Columbus• **Stereo Connections:** Valdosta• **Stereo Festival:** Atlanta• **Stereo Shop:** Martinez.
HI- Honolulu Home Theater: Honolulu.
IA- Ultimate Electronics: Cedar Rapids, Des Moines• **Archer Audio Video:** Ft. Dodge• **Audio Video Logic:** Des Moines• **Audio Visions:** Sioux City• **Hawkeye Audio:** Iowa City, Cedar Falls• **Renier's:** Dubuque• **Sound World:** Mason City.
ID- Ultimate Electronics: Boise.
IL- United Audio Centers: Chicago & Suburbs• **Good Vibes:** Bloomington, Champaign• **Jon's Home Ctr.:** Quincy• **Sound Forum:** Crystal Lake• **State Line Satellite:** Rockford• **Sterling Electronics:** Sterling• **Sundown A/V:** Springfield• **The Shoppe:** Bradley.
IN- Classic Stereo: Ft. Wayne, Mishawaka• **Kings Great Buys:** Evansville• **Ovation Audio:** Clarksville, Indianapolis, Lafayette.
KS- Accent Sound: Overland Park• **Advance Audio:** Wichita• **Audio Junction:** Manhattan.
KY- King's Great Buys: Owensboro• **Long Run Audio:** Paducah• **Ovation Audio:** Lexington, Louisville.
LA- Alterman Audio: Metairie• **Home Theater Concepts:** Slidell• **Mike's Audio:** Baton Rouge• **Wright's Sound Gallery:** Shreveport.
MA- Media Systems: Boston• **Nantucket Sound:** Hyannis• **Pittsfield Radio:** Pittsfield.
MD- Gramophone: Baltimore, Ellicott City• **Myer-Emco:** Frederick, Gaithersburg, Beltsville, Rockville• **Soundscape:** Baltimore.
ME- New England HiFi: Scarborough.
MI- Contemporary Audio: Okemos• **Pecar's:** (Detroit)Troy• **Classical Jazz:** Holland• **Court St. Listening Room:** Saginaw• **Superior Sound:** Grand Rapids.
MN- Audio King: Minneapolis & Suburbs, Rochester, St. Cloud• **Audio Designs:** Winona.
MO- Independence A/V: Independence• **Sound Central:** St Louis.
MS- Ideal Acoustics: Starkville• **McLelland TV:** Hattiesburg• **Players A/V:** Ridgeland.
MT- Rocky Mt. Hi Fi: Great Falls.
NC- Audio Video Systems: Charlotte• **Audio Visions:** Wilmington• **Now AudioVideo:** Durham, Greensboro, Raleigh, Winston Salem• **Tri City Electronics:** Conover.
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OK- Ultimate Electronics: Tulsa.
OR- Bradford's Home Ent.: Eugene• **Kelly's Home Ctr.:** Salem• **Magnolia HiFi:** (Portland) Beaverton, Clackamas• **Stereo Planet:** Bend.
PA- Audio Junction: Pittsburgh• **Audio Lab:** Fairless Hills• **Ed's TV:** Hatfield• **Gary's Elect.:** State College• **GNT Stereo:** Lancaster• **Hart Elect.:** Blakely• **Hi Fi House:** Abington, Broomall, Camp Hill, Harrisburg• **Listening Post:** Pittsburgh• **Stereo Shoppe:** Selinsgrove, Williamsport• **Stereoland:** Natrona Heights• **The Stereoshop:** Greensburg.
RI- Stereo Discount Ctr.: Providence.
SC- Custom Theater & Audio: Myrtle Beach• **Music Masters:** Greenwood• **Upstairs Audio:** Columbia.
SD- Audio King: Sioux Falls• **Sound Pro:** Rapid City.
TN- College HiFi: Chattanooga• **Good Vibrations:** Cookeville• **Hi Fi Buys:** Nashville• **Now Audio Video:** Knoxville• **Modern Music:** Memphis• **Sound Room:** Johnson City.
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UT- AudioWorks: Salt Lake City• **Crazy Bob's:** St. George, Cedar City• **Ultimate Elect.:** Layton, Murray, Orem, Salt Lake City.
VA- Myer-Emco: Falls Church, Tyson's Corner, Fairfax• **Audio Connection:** Virginia Beach• **Audiotronics:** Roanoke• **Home Media Store:** Richmond.
WA- Bunch-Finnegan TV: Kennewick• **Magnolia HiFi:** Seattle & Suburbs, Tacoma, Silverdale, Spokane• **Pacific Sight & Sound:** Wenatchee.
WI- Audioworks: Washburn• **Flanner's A/V:** Milwaukee• **HI-Fi Heaven:** Appleton, Green Bay• **Sound World:** Wausau• **Team Electronics:** Manitowoc.
Puerto Rico- Precision Audio: San Juan.
Canada- Advance Electronics: Winnipeg• **Air Waves Radio & TV:** Moosejaw, SK• Audio Express: Saskatoon, SK• **Audio Shop:** Ottawa• **Bay Bloor Radio:** Toronto• **Canadian Sound:** Brampton, Ont.• **Digital Dynamics:** Clearbrook, B.C.• **Environment Electronique:** Westmount, Que.• **Harrington Audio:** Peterborough, Ont.• **K&W Audio:** Calgary• **Kebecson:** Montreal• **Lipton's Elect.:** Newmarket, Ont.• **StereoLand:** Windsor, Ont.
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test report BY KEN C. POHLMANN

Velodyne

Classic Home Theater Speaker System



The long-distance phone commercials ask, "What can you get for a buck?" As it turns out, you can get 20 minutes of talk time to anywhere in the U.S., which isn't too bad a deal. You might also reasonably ask, "What can you get for a thousand bucks?" Well, one thing you can get is five satellite speakers and a powered subwoofer. But would you really want to?

To see what kind of system you can get for under $1,000, I welcomed yet another deliveryman to my door. This time he came bearing two large and heavy boxes, one holding a Velodyne Classic Home Theater System (CHTS), comprising four CT-41 left/right satellites and one CT-42 center speaker, and the other holding Velodyne's CT-80 powered subwoofer. All six speakers came finished in black vinyl; the satellites are also available in white.

The CT-41 speakers are small, but their heft (7 pounds apiece) suggests more sonic firepower than you might expect from their size. In fact, the enclosures are made of ⅝-inch-thick MDF (medium-density fiberboard), and they're quite solid. Both the high-pass and low-pass crossovers are second-order (providing 12-dB slopes), and a built-in protection circuit momentarily mutes the signal to prevent damage to the speaker. Around back each speaker has two binding posts (again, much beefier than you might expect) and a keyhole slot for wall hanging.

Designed to be placed atop your TV, the CT-42 center speaker is almost as small as the four L/R satellites and is fairly weighty at 14 pounds. Its drivers match those in the CT-41, with two woofers symmetrically flanking the tweeter; the same binding posts, crossovers, and protection circuitry are used as well. Both the CT-41 and CT-42 are magnetically shielded.

The CT-80 is a conventional front-firing subwoofer, with a vented slot just underneath the driver. Like the satellites, it's heavier than it looks. Around back, one knob adjusts volume and another selects a low-pass crossover frequency between 40 and 120 Hz; the slope steepens progressively from 12 to 24 dB per octave as you raise the cutoff frequency. One switch engages or bypasses the internal crossover, a phase switch selects 0 or 180° relative to the main speakers, a third switch selects power-on or auto-on, and a fourth switch selects master power on or off.

Two RCA inputs accept line-level audio

fast facts

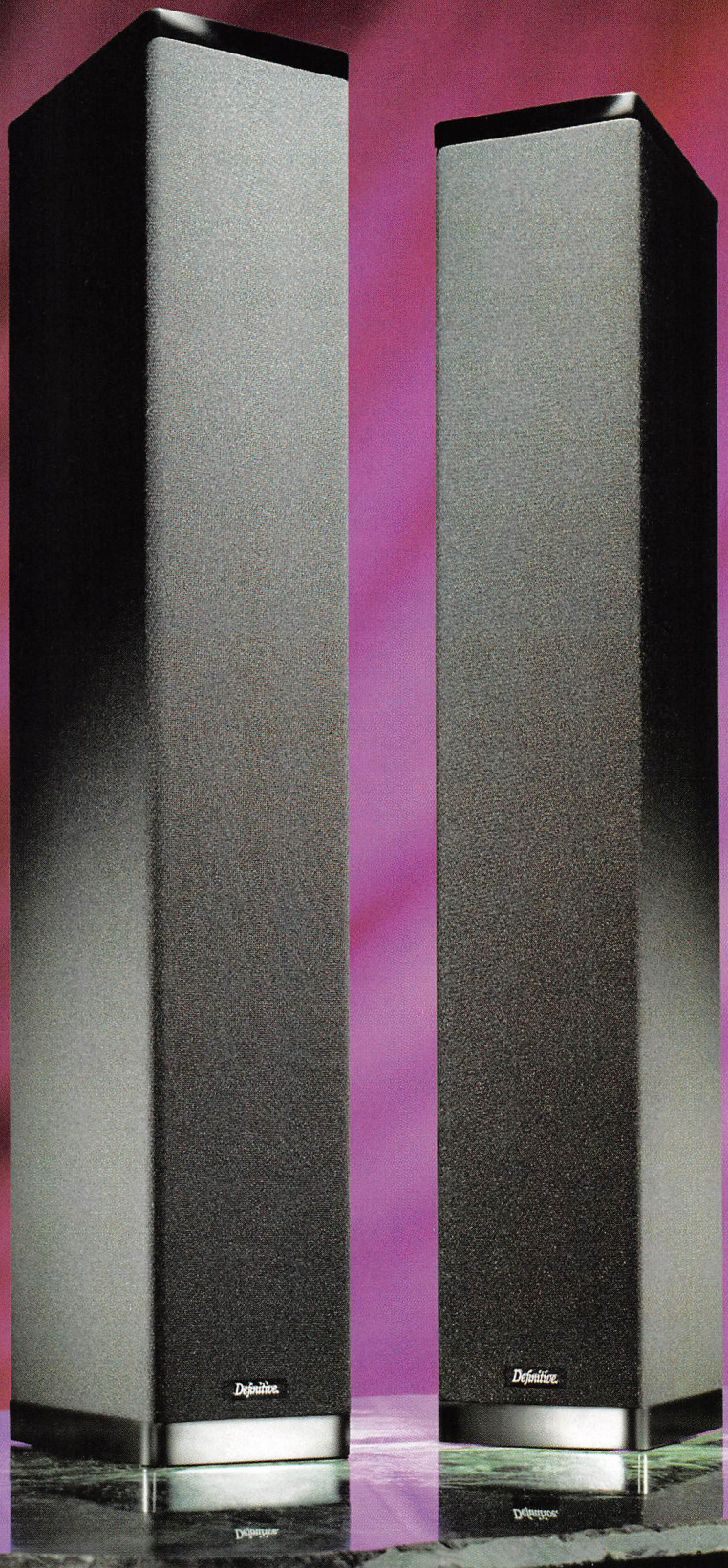
	CT-41 (L/R satellites)	CT-42 (center)	CT-80 (subwoofer)
TWEETER	¾-inch soft dome	¾-inch soft dome	—
WOOFER	4-inch cone	two 4-inch cones	8-inch cone
POWER	—	—	100 watts
ENCLOSURE	sealed	sealed	vented
DIMENSIONS (WxHxD)	5½ x 8½ x 6¼ inches	13 x 5½ x 6¼ inches	15 x 12 x 16 inches
WEIGHT	7 pounds	14 pounds	44 pounds
FINISH	black or white vinyl	black vinyl	black vinyl
PRICE Total: $978	$599 for four plus one CT-42	$179 if purchased separately	$379

MANUFACTURER Velodyne Acoustics, Dept. S&V, 1070 Commercial St., Suite 101, San Jose, CA 95112; phone, 800-835-6393; Web, www.velodyne.com

PHOTO BY TONY CORDOZA

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– Rich Warren, Sound & Vision Magazine



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The Velodyne CT-41 satellites neatly conveyed the swirling sound of the attacking beasties in the DVD of *Bats*, and the CT-80 sub really rumbled.

signals, and two RCA outputs provide line-level signals filtered with an 85-Hz high-pass crossover and a 6-dB-per-octave slope. There are also eight spring-loaded terminals for speaker-level input/output. The CT-80's amplifier is rated at 100 watts and has a large heat sink to prevent things from getting too toasty.

It was easy to drop the little Velodyne satellites onto speaker stands and the center speaker onto my TV, which put all five tweeters at ear level when I was seated (well, flopped down) on my futon. I placed the subwoofer on my front wall about halfway between the TV and the left satellite, a placement that works well in many rooms, including mine. I connected the satellites to the speaker outputs of a Denon AVR-4800 receiver and the sub to its line-level LFE (low-frequency effects) output, then powered up.

I started by auditioning the CT-41s and CT-80 in stereo mode with the Mavericks' *Trampoline*. I like this CD's eclectic mix of Elvis-like gospel, Tex-Mex rock, British pop, country beat, and mariachi heat, and it lets me test reproduction of all these musical styles simultaneously.

When the music started, there was no ignoring the fact that I was listening to small speakers. Small drivers and small cabinets (albeit at a small price) simply cannot take your breath away the way "big speaker" sound can. The sound was, well, smaller, and frequency response is often more ragged. On soulful songs like "Tell Me Why," lead singer Raul Malo belts it out like a young Roy Orbison. The CT-41s yielded good vocal timbre overall, but vocals were somewhat pinched in the critical upper midrange (around 2 to 5 kHz), and that robbed presence from Malo's vocals. Response above that region was brilliant enough, but the sound was a little hard to my ears. The lower-frequency response was good, with a lower-midrange sonority that gave body to the vocals and this tune's beautifully rich bass guitar.

Moreover, the acoustic guitar was clearly enunciated, with great detail on every string. The electric guitar was clean and articulate, but its upper harmonics were a little aggressive, particularly during louder solo parts. The high hat and cymbals seemed a little too crisp (admittedly, I prefer darker speakers). I was surprised that the CT-41s handled high levels so well. When I cranked them up, although distortion increased, they hung in very well.

For "Fool #1," a classic lounge tune with exposed vocals, the CT-41s produced excellent imaging, really etching the vocals into the (phantom) center. I would have liked a mellower sound, but the speakers' imaging and fairly balanced timbre made them more than listenable on this tune.

In the ballad "To Be with You," the string section sounded a little thinner than normal and was a bit hard sounding in the upper register, but not nearly as harsh as I've heard it on some budget speakers. The bass guitar should lay a solid foundation for Malo's soaring vocals. In this case, all the notes were there, the timbre was reasonably good, and the smooth and mellow qualities of the lowest bass notes were apparent in the crossover region between the CT-41s and the CT-80 sub. The drum kit had good bass punch through the CT-80, which also suggested good dovetailing with the CT-41's lower-range response. To obtain that dovetailing, I had to move the sub about 1½ feet closer to my front wall and about 3 feet closer to the corner than I normally place subs. That's a good lesson to remember: speaker placement is always critical and not always predictable.

Of course, the CT-41s are primarily designed to operate in a 5.1-channel system, so I switched in the center and surround speakers, exercising them first with the DTS version of the Eagles' *Hell Freezes Over*. The bass line that opens "I Can't Tell You Why" sounded very smooth, if slightly subdued. When I increased the sub's output level, it responded nicely with more

in the lab

FREQUENCY RESPONSE (at 2 meters)
front left/right.....112 Hz to 20 kHz ±3.2 dB
center.....122 Hz to 18 kHz ±4.6 dB
surround.....112 Hz to 15 kHz ±2.5 dB
subwoofer.....32 Hz to 127 Hz ±2.0 dB

SENSITIVITY (SPL at 1 meter with 2.8 volts of pink-noise input)
front/surround.....88.2 dB
center.....90.3 dB

IMPEDANCE (minimum/nominal)
front/surround.....4.3/5 ohms
center.....3.9/5 ohms

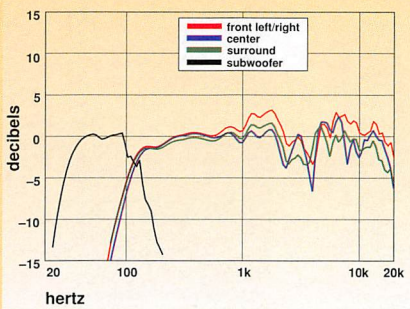
BASS LIMITS (lowest frequency and highest SPL with limit of 10% distortion at 2 meters in a large room)
front/surround.....80 Hz at 79 dB SPL
center.....62 Hz at 64 dB SPL
subwoofer.....25 Hz at 81dB SPL
97 dB average SPL from 25 to 62 Hz
103.7 dB maximum SPL at 62 Hz

All of the response measurements are weighted to reflect the way sound arrives at a listener's ears in a typical listening position and with normal speaker placement. Since the same model speaker is used for both front L/R and surround duties, differences in the response reflect our weighting only, and the other measurements for these channels are identical.

Bass limits were measured at a distance of 2 meters in a 7,500-cubic foot listening room with the subwoofer set to maximum bandwidth. In a smaller room, users can expect 2 to 3 Hz deeper extension and up to 3 dB more SPL from the CT-80 sub.

The overall shape of the response curves for the front, center, and surround channels is practically identical up to 2 kHz. All show some roughness above that point, and the center speaker's is notched around the crossover point, which is common with speakers that have horizontally arrayed drivers. The CT-41 satellite and CT-42 center had limited low-frequency output.

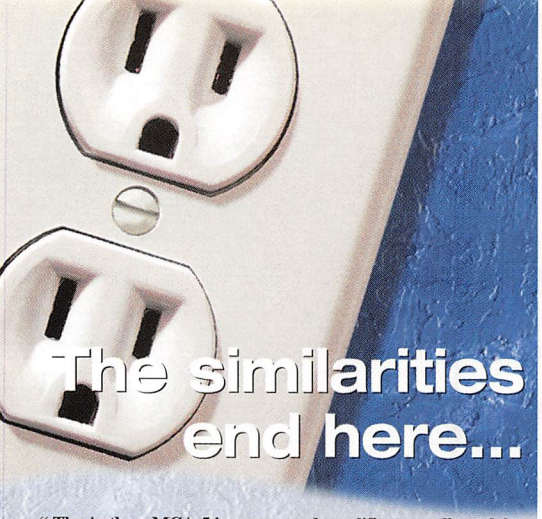
The CT-80 subwoofer had good extension for a small box. Its actual crossover points were well matched to the dial indications, but there was significant interaction between the crossover and level controls. When the crossover frequency was lowered, the sub's apparent level was also reduced. — *Tom Nousaine*



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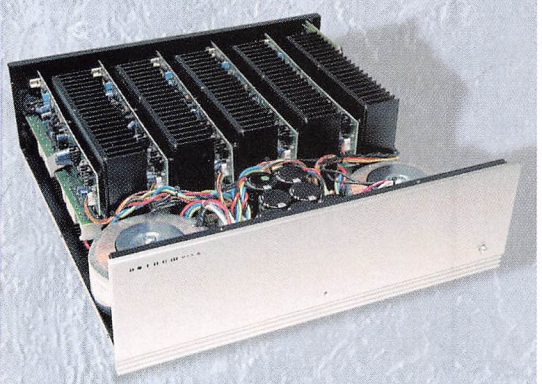


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Rated Power w/ch-4 ohms**	350	225	185	200
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Power Supply Size (μF)	100,000	120,000	60,000	100,000
VA Rating (Max.)	1800	1440	1220	1500
# of Power Transformers	2	1	1	1
# of Output Devices/ch	8	6	4	6
Trigger On (5-24V signal)	Yes	Yes	Yes	Yes
Auto On (music signal)	Yes	No	No	No
Warranty ≥ 5 Years	Yes	No	Yes	Yes
Weight - Net (lbs)	58	56	<43	48
Dollars/Watt	$6.99	$9.99	$10.38	$11.78
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test report

HIGH POINTS

Budget price.
Good movie performance.
Solid midbass response.
Compact cabinets.
Mounting slots on satellites.

LOW POINTS

Budget sound.
Coloration on music.
Limited subwoofer output.

bass that remained tight and not tubby even though the cabinet was close to a corner of the room. You don't normally need much bass from surround speakers, but in this mix the drums are also panned to the rear with a long slap echo. Although the CT-41s lacked the deep punch that bigger speakers would have provided, they delivered more than enough for this effect. The falsetto vocals in the center and front L/R channels came across with a natural timbre.

The famous guitar on "Take It Easy" sounded a little edgy on the high end, but the sound was detailed and clean. The close-miked vocals were natural sounding, correctly conveying even the ambience from the sound-reinforcement system used in this live concert. The sub handled the rockin' kick drum very nicely, with good, solid hits. Drummers Don Henley and Scott Crago are pretty pumped on this track, and the toms should hit really hard. The CT-80 provided the dynamic punch they need to propel this song. The bigger-than-life snare sound, panned exclusively to the center, was appropriately hard-hitting and crisp.

Next I turned my attention to movie sound, which is less critical than music. I expected the Velodyne system to do well with movie soundtracks, and I was not disappointed. Under duress, I watched *Bats*. The first rule of bad screenplays is that after two teenagers kiss, they must die. This movie obeys that rule in the first 2 minutes. After that, the plot goes downhill.

The CT-80 did not have any problems moving air in the numerous bat attacks (filled with mayhem and bass response), and I cranked it up until the critters really rumbled my room. Better yet, there was no audible port noise or other artifacts at reasonable volumes. I raised the cutoff frequency to get more low-end fill, which made the sound somewhat boomy; that wouldn't be acceptable for music listening but is appropriate for most movie soundtracks. This sub's small size and modest power limit its output and bass extension, but it can provide solid midbass, especially in a small room. If you crave truly deep bass, you'll need more power and a bigger cone — Velodyne has plenty of larger subs to choose from.

In Chapter 8, the satellites neatly conveyed the swirling sound, panned around the room, of the attacking bats as they squealed and beat their wings against an SUV. The movie's musical score is not especially potent, but it sounded punchy and crisp through the front L/R satellites. For some reason, this film was mixed with a lot of sound effects (such as bat squealing) in the center channel, and the CT-42 did fine, even at loud levels. More important, dialogue in the center channel was extremely intelligible — the thinness that had occasionally bothered me in music playback made spoken words sound crisp and clear, with only modest coloration. The CT-42's off-axis sound was acceptable, but it did get audibly rough at extreme angles.

Judging from the many home theater speaker systems I've auditioned, budget systems can be just fine for movies, but they rarely excel with music. And that was the case with this Velodyne system. The satellites had the kind of midrange coloration that's typical of small speakers, and this diminished the fidelity of their critical music reproduction. On the other hand, the system was quite enjoyable with movies, providing a crisp and lively sound that suits most soundtrack mixes. In addition, the satellites played much louder than their small size would suggest.

Velodyne almost singlehandedly invented the stand-alone subwoofer, back when such a thing was considered very weird. Today, a stand-alone sub is *de rigueur* for a home theater system. Within its size and power constraints, the CT-80 is a worthy continuation of the Velodyne tradition. It delivered a respectable rumble during movies and provided clean musical bass. I like this budget sub.

For $1,000, you can make a thousand 20-minute phone calls, or you could buy this Velodyne home theater speaker system. It's not the best music system you'll ever hear, but its movie performance is very respectable given its size — and especially its price. You may find that it fits your needs just fine. S&V



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– **Mike McGann**
Editor-in-Chief
E-Gear Magazine
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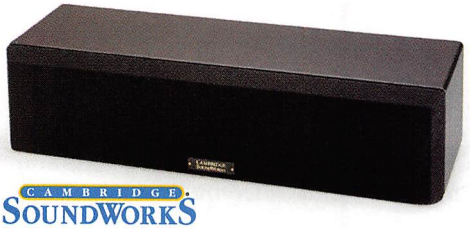


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test report BY DANIEL KUMIN

Anthony Gallo Acoustics

Nucleus Micro Home Theater Speakers



PHOTO BY TONY CORDOZA

"Well, doctor," I said, "I guess it's mostly just that horrible sameness. All those small, rectangular, wood-grain-vinyl boxes, month in and month out. I dream about them," I continued, "thousands of them — marching up Broadway, 5.1-abreast. Sure, most of them sound just fine, but oh! The sameness! There are days I can't bring myself to answer the door when the UPS truck pulls in."

"Sameness, you say?" the doctor replied. "Vood-grain rectangles? Boxes? Ach, ja! I know just vat you need: I prescribe two veeks mit Gallo."

"Wine?" I demanded incredulously. "I come to you in the grip of a clinical depression, and you advise a bender on cheap burgundy? What kind of a doctor are you?"

"Not Ernest and Julio," answered the doctor patiently. "*Anthony* Gallo — Anthony Gallo Acoustics! And as to your other question: Freudian, of course! Now go — go und listen!"

Anthony Gallo Acoustics is a bicoastal firm originally founded in Brooklyn some six years ago. Though initially a high-end outfit, Gallo is currently concentrating on an affordable variant of its initial design called the Nucleus Micro. The speaker is sold in both stereo and home theater systems along with a powered subwoofer (it can also be purchased individually). But while the concept of five identical small satellites and a powered sub is conventional, the Gallo elements are anything but.

Each Nucleus Micro satellite is a polished steel sphere, almost exactly the size of a regulation softball but a good deal heavier. (I didn't try batting one, so I can't report how well they carry.) About one-eighth of the spherical enclosure is lopped off to create a grille-covered opening through which a single 2½-inch driver radiates, covering the full spectrum from treble to midrange. The opposite side of the sphere is flattened for the terminal plate, holding a threaded socket for wall- or stand-mounting and dual binding posts. The speaker accepts banana plugs, of course, but the posts are sized for relatively light-gauge wiring. Gallo recommends an

fast facts

KEY FEATURES
- Small spherical enclosures for single-driver satellites
- Compact powered subwoofer

TREBLE/MIDRANGE Nucleus Micro satellites, single 2½-inch cones
BASS MPS 150 subwoofer, 10-inch cone
POWER subwoofer amp, 150 watts
ENCLOSURES sealed
DIMENSIONS Nucleus Micro, 4-inch-diameter sphere; MPS 150 sub/amp combo, 10¾-inch-diameter cylinder, 12½ inches high stacked, including feet
WEIGHT Nucleus Micro, 1 pound; MPS 150, 33 pounds total (subwoofer, 20 pounds; amp, 13 pounds)
FINISH Nucleus Micro, powder-coated black or white (colors and brushed stainless steel available at extra cost); MPS 150, black textured metal
PRICE (complete system) $1,500 in black or white; $1,625 with colored satellites; $1,750 with stainless-steel satellites
MANUFACTURER Anthony Gallo Acoustics, Dept. S&V, 20841 Prairie St., Chatsworth, CA 91311; phone, 818-341-4488; Web, www.roundsound.com

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Surround effects from the DVD of Clint Eastwood's *True Crime* sounded believable on the Gallo system, and stereo imaging was impressive.

unusual, solid-core wire and packs a generous length of it with each speaker.

Gallo offers a slim but heavy modernist stand ($150 a pair), which I used for the front left/right satellites. However, packed with each satellite is a 1½-inch-diameter soft rubber ring that works well as a "stand" for tabletop or shelf placement — very simple and clever, even if it does look like a standard plumbing O-ring. I employed one on top of my 40-inch projection TV for the center speaker and two more for the surround speakers, which I shelf-mounted. The manufacturing and finish quality of the Nucleuses (Nuclei?) are impressive, and the industrial design is simple, strong, and smart. Gallo supplied our test samples finished in a glossy, powder-coated burgundy instead of the standard black or white. Colors cost $25 extra per speaker, and a $50 premium gets you an attractive brushed stainless-steel finish.

Only a bit less unconventional, the MPS 150 subwoofer is a round, hatbox-like metal cylinder just barely big enough to clothe a single, downward-radiating 10-inch cone driver. Its sole external feature is a ¼-inch jack that connects it to its companion amplifier module, another cylinder that fits perfectly on top. The amp has conventional sets of stereo inputs and outputs, both speaker-level (via relatively light-gauge push-connectors) and line-level (via RCA jacks). The speaker-level connection provides high-pass filtering to the satellites. Two knobs, each with nice, high-quality click-stop action, control the output level and crossover frequency, which is adjustable between 50 and 180 Hz.

I set up the Nucleus Micro system with a five-channel digital surround receiver rated for 125 watts per channel, using my tried-and-true locations: the front L/R satellites roughly 2 feet to either side of the widescreen TV, the center speaker on top of the TV, and the surrounds on wall shelves high on either side of the listening position. I did all of my listening using the speaker-level connection, which sounded better than with my receiver's 80-Hz crossover. I began with the 120-Hz crossover setting the manual suggests.

Commencing as usual with stereo listening, I was quickly impressed by the Gallo system's easy, natural vocal sound. Both male and female vocals had very little coloration, though I noted a slight "dryness" in the upper midrange. Otherwise, voices were relaxed, organic, and well balanced across a wide range of musical genres. Playing a favorite CD of Charles Ives songs performed by the late, great soprano Jan DeGaetani with the living but no less great pianist Gilbert Kalish (Nonesuch 71325), the Nucleus Micro system conveyed these artists' nearly boundless dynamic range and tonal nuance with little compromise.

The satellite speakers featured very wide dispersion and were smooth throughout the midrange. Considering their lack of conventional tweeters (or any other sort, for that matter), treble spread was good, too. But I did find that staying close to the "sweet spot" — less than about 20° off-axis either horizontally or vertically — paid audible dividends in top-octave openness and air. For instance, in Sinatra's *Duets* (Capitol/DCC), the jazzy high-hat or cymbal "rides" integral to most of the tunes sounded a bit less prominent and clear as soon as I stood up or moved 2 or 3 feet off-center. I also felt that the satellites sounded a bit uneven over the top octave-plus. On cuts like "The Promise" from the jazz CD *Serendipity* (Reference Recordings RR-20CD), cymbal rides were a bit zippier and more forward, a shade fizzier, and less open and merrily metallic than on my everyday stereo monitors.

Stereo imaging was impressive. Well-recorded soloists projected far into the room, with a strong impression of depth around and behind them. A bit paradoxically, however, the sense of hall "air" and envelopment that I hear from the Ives recording on my reference speakers was only moderate here. The combination of strong imaging and modest air tended to create an attrac-

in the lab

FREQUENCY RESPONSE (at 2 meters)
front left/right .....278 Hz to 13 kHz ±6.6 dB
center .....278 Hz to 13 kHz ±6.6 dB
surround .....278 Hz to 11 kHz ±5.2 dB
subwoofer .....55 Hz to 1132 Hz ±1.9 dB

SENSITIVITY (SPL at 1 meter with 2.8 volts of pink-noise input)
satellites .....84.5 dB

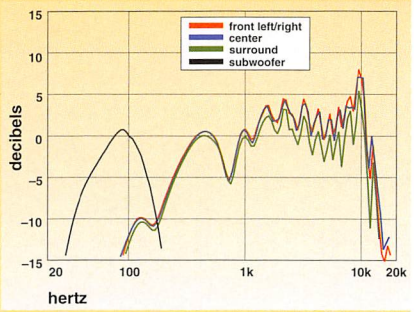
IMPEDANCE (minimum/nominal)
satellites .....6.5/10 ohms

BASS LIMITS (lowest frequency and highest SPL with limit of 10% distortion at 2 meters in a large room)
satellites .....100 Hz at 69 dB SPL
subwoofer .....25 Hz at 86 dB SPL
95 dB average SPL from 25 to 62 Hz
102.1 dB maximum SPL at 62 Hz

All of the response measurements were weighted to reflect how sound arrives at a listener's ears in a typical listening position with typical speaker placement. The front left/right speakers were averaged over a ±30° window, with double weight given to 30° off-axis. Center-speaker response was averaged over ±45°, and double weighting was applied directly on-axis, where the primary listeners will sit. Surround response was averaged over a ±60° window, with double weight given to 60° off-axis. Because the Gallo Nucleus Micro system uses identical satellite speakers in all channels, the response measurements and graph curves simply reflect the different weighting. The satellites were measured on their optional stands. Each satellite had a generally rising response, a midband notch caused by the floor reflection associated with the stand height, considerable roughness above 1 kHz, and limited bandwidth at both ends of the spectrum.

Bass limits were measured with the subwoofer in the optimal corner of a 7,500-cubic-foot listening room and set to maximum bandwidth. In a smaller room users can expect 2 to 3 Hz deeper response and up to 3 dB more sound-pressure level (SPL).

The MPS 150 subwoofer had limited output capability, which is to be expected for a 10-inch driver in a small enclosure. Response fell off quickly below 50 Hz, but the speaker could produce a respectable 86 dB SPL at 25 Hz with low distortion. — *Tom Nousaine*



HIGH POINTS

Inconspicuous, modern, attractive.
Smooth, accurate midrange.
Dramatic imaging.
Impressive bass extension at moderate volume.

LOW POINTS

Tricky subwoofer/satellite blending.
Relatively small "sweet spot" for high treble.
Restricted bass at high volumes.

tively intimate, "in-the-room" impression on good, natural-acoustic recordings.

Frankly, I had a rather challenging time getting the best possible blend between the Nucleus Micro satellites and the MPS 150 subwoofer. Running the sub loud enough to produce satisfyingly full male vocals and other lower-midrange sounds made the output in the upper bass, around 100 Hz, slightly excessive, though not bloated. And while lowering the crossover frequency to tame this effect did the trick (and revealed surprising output in the 40-Hz region from the tiny sub), it reintroduced the original problem — thin-sounding deep male voices and a discernible transitional "hole" between subwoofer and satellites.

Extensive experimentation with the subwoofer crossover and level settings, and with its placement, eventually yielded the best compromise for my setup — a crossover setting just a tick or two higher than Gallo's recommendation of 120 Hz and the sub placed just in front of the left speaker, about 4 feet from the wall and well away from any corner. (The sub drew attention to its position a bit, especially at high volumes, if it was more than 2 or 3 feet from the nearest front L/R speaker.)

All this fiddling paid off with tonal balance that was a good deal smoother than in my initial attempts. Bass was now even and impressively weighty sounding down to 40 Hz and perhaps a bit lower. The sub/sat blend was also much better, but whatever variation of crossover frequency and level I tried, there was still either a very mild lower-midrange hole or a faintly overblown quality to upper-bass sounds. Subwoofer/satellite systems are notoriously room-dependent and setup-sensitive, however — a different room, or an entirely new room arrangement in my studio, would very likely yield different results.

As a surround system, the Nucleus Micro system worked surprisingly well. The center speaker did its job smoothly and accurately, delivering dialogue and music in an intelligible, well-integrated fashion — and the cohesiveness of the three front speakers was impressive. Lateral pans were solid and smooth most of the time, and ambient effects showed little of the "pointing" localization many direct-radiating surround speakers are prone to. In the rainy-night car crash that kicks off the action of *True Crime*, the rain and thunder were believably enveloping, without the front/rear gaps I sometimes hear. As the white BMW skidded and fishtailed, the sound effects tracked it smoothly and realistically.

Surround-encoded music also sounded better than I might have expected. Using the excellent 5.1-channel music mode of the Harman Kardon AVR 7000 A/V receiver, or DTS-encoded CDs, yielded even, spacious, yet natural results. In all-channels mode the Nucleus Micro system can play loud: I tried rocking out a few favorites and was impressed by the results. However, while the Gallo system played a hell of a lot louder than I'd have predicted, it cannot crank without limit. At high volumes the sub is the earliest limiter on bass-rich material, tending toward fairly noticeable, fluttery "doubling." So while the system produces enough genuine deep bass for movie sound, it's only available at family-room levels, not real cinema levels — which is all about 95% of us ever ask for.

And so, in conclusion . . . what? I'm at a bit of a loss to sum up the Nucleus Micro system. It would be grossly unfair to label it a dancing bear — meaning that it's not how well the bear dances that impresses us, but that he dances at all. On the contrary: the Gallo suite is qualitatively competitive with plenty of $1,500 home-theater-in-a-box systems. Its radical form invites more stringent comparisons, however, and several more conventional six-piece systems in this price range sound as good — and play louder.

While Gallo's "round sound" is unlikely to appeal to ultraconservative buyers, it ought to prove mighty attractive to trendsetters, not least because the speakers can either disappear into a room or complement a modernistic décor. In the end, Gallo's Nucleus Micro system is probably best described by a word that's all too often awarded undeservedly: unique. S&V



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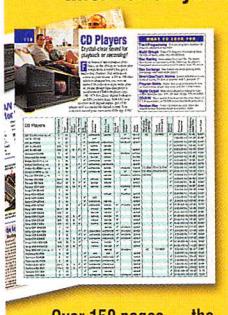


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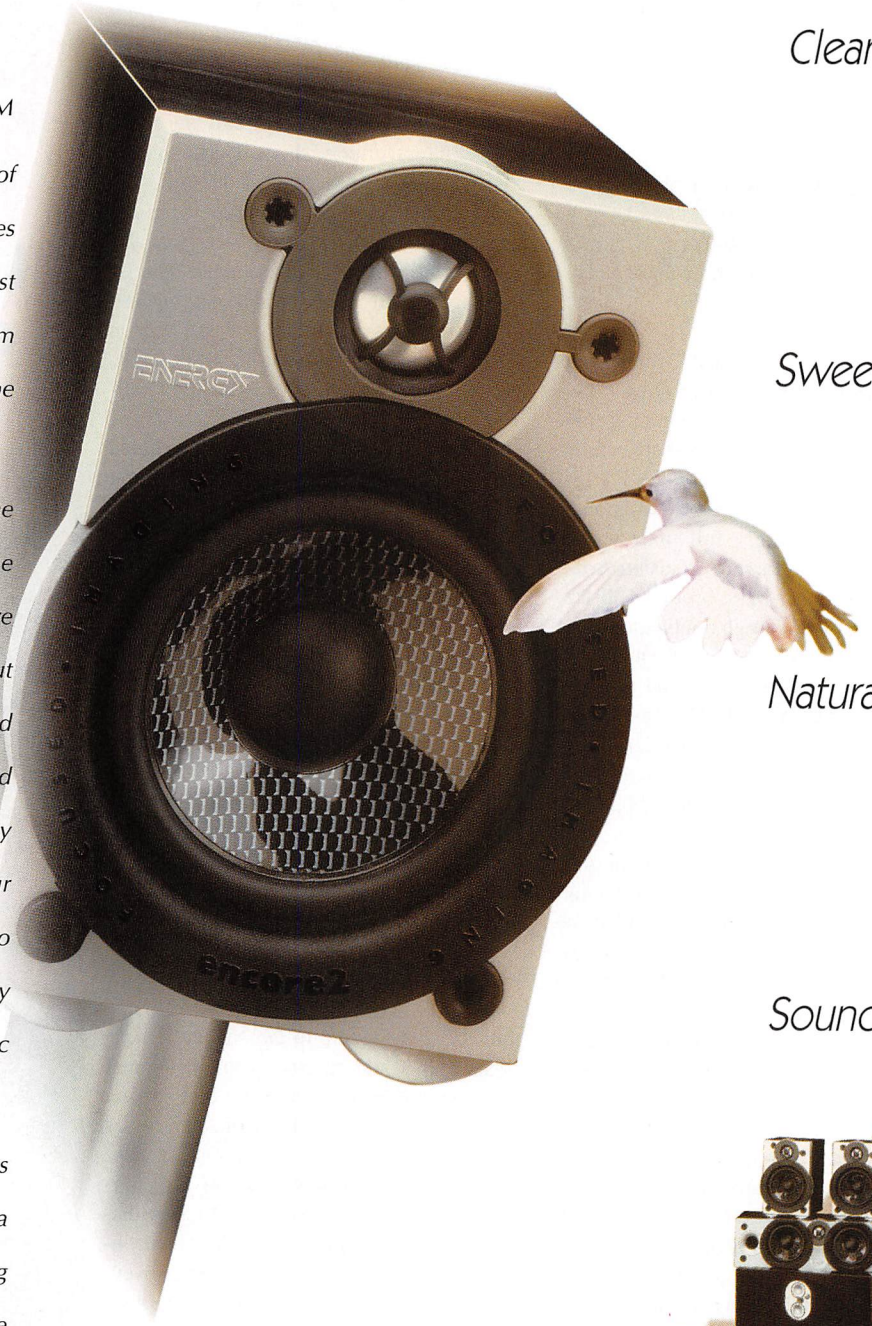
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RCA

38-inch HDTV/DirecTV Receiver



PHOTOS BY TONY CORDOZA

Like a pumpkin left too long on the vine, digital TV (DTV) technology gestated in labs for years before getting the government seal of approval. This could explain why almost all of the first-generation high-definition (HDTV) sets were huge, living room-hogging rear-projection TVs (RPTV). A few options did pop up in the direct-view category, including widescreen (16:9 aspect ratio) sets from Sony, Panasonic, and Princeton Graphics. But while these took up less space, they were expensive, costing anywhere from $4,000 to $9,000 — and the lower-price ones didn't include a tuner. Depending on the manufacturer, that could run you another couple grand.

Now that DTV is wrapping up its second year, prices for sets capable of displaying the new TV standard's high-resolution formats are starting to plunge. And while there hasn't been a dramatic expansion on the programming front, a greater range of set options has become available, including manageable-size widescreen direct-view models from many manufacturers. If you lack the real estate to accommodate an RPTV, a large direct-view set is an excellent alternative.

At $3,800, RCA's F38310 is the least expensive widescreen direct-view TV with a built-in HDTV tuner available. And at 38 inches (diagonal), it's also the largest. Many other widescreen direct-views on the market have 34-inch screens — okay for watching DTV broadcasts or letterboxed movies on DVD but a bit on the small side when you switch over to watching standard 4:3 aspect ratio programs. The RCA's larger screen delivers a 4:3 image that's equivalent in size to what you'd see on a standard 32-inch TV. Considering that the vast majority of programming will be in the 4:3 format for years to come, those extra inches are a welcome thing.

Adding to the F38310's value is its built-in HDTV receiver, which tunes in both standard- and high-definition DirecTV satellite transmissions as well as analog *and* digital broadcasts pulled in by antenna. Using the receiver's onscreen guide, you can scroll through lists of either satellite or broadcast channels with the TV's remote control. Once you've decided which program you want to watch, you press a button and the receiver tunes directly to the channel. For now, onscreen program information — including title, synopsis, and

fast facts

KEY FEATURES
- 38-inch (diagonal) direct-view widescreen display
- Built-in HDTV/DirecTV receiver
- Syncroscan HD component-video input
- Line doubles standard video signals

DIMENSIONS 43⅛ inches wide, 26⅜ inches high, 25¾ inches deep
WEIGHT 216 pounds
PRICE $3,800 ($4,100 with stand as shown)
MANUFACTURER RCA, Thomson Consumer Electronics, Dept. S&V, 10330 N. Meridian St., Indianapolis, IN 46290; phone, 800-336-1900; Web, www.rca.com

HIGH POINTS

Reasonably priced integrated HDTV. High-def DirecTV receiver also tunes in off-air DTV broadcasts. Great image quality.

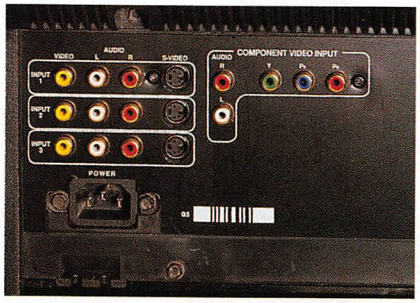
LOW POINTS

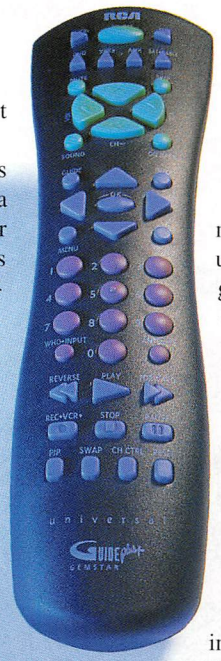
No direct display-mode switching via remote control. Minor upconversion artifacts.

start/stop times — is for the most part available only for satellite channels, although it's possible that terrestrial digital broadcasters may eventually begin embedding program and schedule data in broadcasts, as the DTV standard allows.

While it lacks the flat screen of some of the other widescreen direct-view sets I've encountered, the F38310 is still a very cool-looking TV. Its front-panel controls, which include buttons to navigate onscreen menus and to control channel, volume, and input selection, are actually hidden away on top of the set. For convenient camcorder hookups, a front A/V input with composite-video jacks is located along with a headphone jack beneath a sliding door on the TV's lower left side.

The set's built-in HDTV/DirecTV receiver features two RF antenna inputs and a third RF input for connecting a satellite dish. There are three A/V inputs with composite- and S-video jacks as well as a component-video input that RCA calls Syncroscan HD — this accepts signals from standard and progressive-scan DVD players as well as set-top HDTV decoders. The set provides fixed- and variable-level stereo outputs, spring-clip speaker outputs, and an optical digital audio output to route a Dolby Digital bitstream to an outboard audio rig. Since the set's internal speakers can't play very loud without audible strain, if you don't have a good audio setup, I'd recommend at least buying a decent pair of small outboard speakers to connect to its 10-watt stereo amplifier.





The remote control that comes with the set is large and filled with a lot of small buttons. They'd be easier to see in the dark if the keypad was truly backlit instead of merely glow-in-the-dark. The remote has buttons for toggling through the TV's inputs, but there's no button to quickly access its three display modes. These include Full, for 16:9 DTV programs and anamorphic widescreen DVDs; Fill, which stretches 4:3 images to fill the screen; and Standard, which correctly displays 4:3 images, filling out the screen with gray side panels. To select a particular display mode, you have to go through several pages in the onscreen menu. On the plus side, you can assign a specific display mode along with custom picture settings to a particular input. This will ensure, for example, that the set defaults to the Full mode when you're watching a widescreen DVD or a DTV program pulled in by antenna or satellite dish.

Calibrating the RCA's picture controls was tricky because the onscreen menu's graphics obscure a large portion of the test patterns contained on Ovation Software's *Avia* test DVD. The adjustment steps were also coarse compared with other TVs. Nonetheless, once I adjusted the color, brightness, sharpness, and contrast settings using *Avia*'s test patterns, I was pleased with the results.

After selecting the Warm color-temperature setting, but before calibration, I measured 7,305 K on the low end of the gray scale and 7,203 K on the high end. Both of these measurements deviated from the 6,500 K NTSC standard by only 700 to 800 K, which in my experience is about as good as it gets for out-of-the-box TV performance. The RCA's gray scale was also very linear, measuring within the same 700- to 800-K range at various steps between the high and low end.

Standard NTSC video signals from DVD or satellite get upconverted to a 540-line progressive-scan digital format (540p). Viewing Chapter 8 on the *Dragonheart* DVD, which opens on a diagonal crane shot that's bursting with all manner of lines — diagonal, horizontal, and vertical — I noticed a few motion artifacts generated by the upconversion, but only while I was standing very close to the screen. At a comfortable viewing distance of approximately 10 feet, the artifacts were barely if at all noticeable.

Of course, with a progressive-scan DVD player connected to the set's component-video input, there were no motion artifacts at all, even when my eyeballs practically brushed the screen. It was with this setup that I watched the new and improved DVD release of *Interview with the Vampire*. The RCA set proved capable of holding a rock-solid black level during shifts between shots with varying amounts of brightness. In a movie like *Interview*, where most scenes are swathed in darkness and gloom, with the occasional medium-bright scene mixed in, this ensured that every shot had punchy-looking highlights and well-detailed shadows.

With high-def signals, the RCA set's image was crisp, highly detailed, and totally beguiling.

The set's color rendition was excellent. In the scenes from *Interview* where Christian Slater is questioning the vampire (Brad Pitt), the difference between Pitt's pale, dead-looking flesh and his human interrogator's livelier complexion was readily apparent. The vampires' velvet and fur-lined costumes also came across as incredibly vivid, the colors bursting forth without looking at all soft or oversaturated.

The RCA displays 1080i-format high-

def signals in their native resolution and converts 720p- and 480p-format signals to 1080i (signals from progressive-scan DVD players, however, bypass upconversion and are displayed as 480p). With all the high-def programs that I watched, the direct-view RCA set's image was crisp, highly detailed, and totally beguiling. The problem is, "high-def" movies that air on satellite services — either DirecTV or Dish Network — are not always the real deal but rather standard video that's been upconverted. Long stretches of time may pass before you see a movie that's actually been transferred in high-def.

Although the RCA's DirecTV receiver worked fine, my limited time window with the set led me to tap my Dish Network feed also in search of true high-def. Fortunately, I ran into the real thing right away: a 1080i transfer of the movie *Down in the Delta*, which was showing on the Showtime-HD channel. The RCA let me clearly see the fine patterns sewn into curtains and couches. So much detail had an almost hypnotic effect, compelling me to keep watching the movie even though I'd missed the first half-hour.

With its big (for a direct-view set) 38-inch widescreen display, its built-in HDTV/DirecTV receiver, its good looks, and its comparatively low price, RCA's F38310 adds up to a great HDTV package. Add in the Syncroscan HD component-video input — a feature missing from the last RCA integrated HDTV set I looked at — and it's a slam dunk. If you're short on space for an even bigger rear-projection TV, or just prefer the wonderfully crisp picture that a direct-view model delivers, set your sights on this RCA set. S&V

in the lab

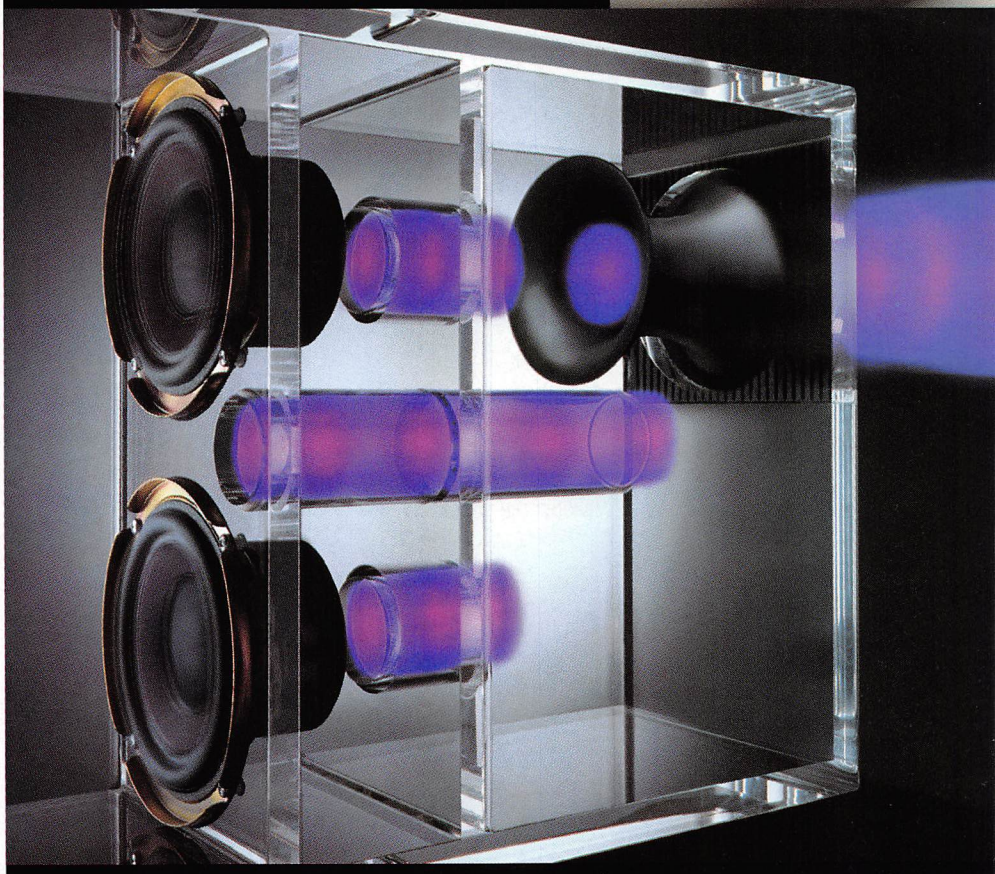
COLOR TEMPERATURE
(Warm setting; before/after calibration)
Low window.....7,305/6,557 K
High window.....7,203/6,537 K

Brightness (Warm setting; before/after calibration).....18.5/18.4 ftL

After calibration, the F38310's gray scale tracked within 100 K of the standard 6,500 K at each 10-IRE step between 20 and 100 IRE, which is impressive performance. The set's 3-D comb filter also performed extremely well, showing no artifacts on transitions in the SMPTE color-bars pattern. Geometry overall was good, though there was mild stretching at the outer edge of the screen with a 16:9 circular hatch pattern. — *A.G.*

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Stereo Review, June 1998
Tom Nousaine



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test report BY KEN C. POHLMANN

Hitachi

DV-W1 DVD Player/CD Recorder



Not to gloat or anything, but I've been feeling pretty good about myself since the end of the Cold War. I mean, after all, the good guys won, and the bad guys lost. Most important, we avoided a socialist world in which everyone drives the same car and owns the same home theater system (hell, with Communism, we probably wouldn't even have home theaters!). Instead, we're treated to a consumer-driven world in which competition and diversity thrive. Almost any product you can imagine is available if you can afford it.

Case in point is the Hitachi DV-W1 DVD player. Of course this $800 player has onboard Spatializer N-2-2 virtual surround sound processing. Of course it reads and passes through DTS soundtrack data. Of course it plays 96-kHz/24-bit encoded DVDs. Of course it offers 2X and 4X digital zoom for any of nine portions of the screen. Of course you can adjust the video luminance and hue as well as sharpness and black level. Of course it has composite-, component-, and S-video outputs and both coaxial and optical digital audio outputs. Of course it has an onboard Dolby Digital decoder and the six analog audio outputs to go with it. And it also has a CD-R/RW recorder — I'll bet that one surprised you! Well, the left drawer is mainly for DVDs, and the right one is for CDs, including write-once CD-Rs and rewritable CD-RWs. Pretty neat, no? The Commies would never have thought of anything so clever, and that's why they lost the war.

The DV-W1's brushed-aluminum front panel sure didn't come from a tractor factory. It's extremely spiffy and dovetails nicely with the low-slung metal chassis and decorative plastic side panels. As on most DVD (and CD) players, the visible button count is extremely low. You'll find a power button, open/close buttons for each of the drawers, and a display button that controls what's on the blue fluorescent readout. Two dubbing-related buttons make copying CDs a snap. Two small lights on either side of the display show which transport is active.

In a consumer-based society, more is always better. So when you flip down the DV-W1's lower front panel, you're confronted with 17 more buttons as well as a headphone jack with volume control. There are two sets of transport controls, one for each drawer, as well the an all-important record button for the CD recorder. Around back, there are stereo analog and both coaxial and optical digital audio inputs. While the optical jacks accept the usual Toslink plugs, they have *un*usual self-contained lids to keep out dust and dirt.

The remote control is nicely designed and terrifically user-friendly. Instead of the

fast facts

KEY FEATURES
- DVD Disc Navigation creates custom scene menus
- Built-in Dolby Digital decoder
- Dual transports for easy CD dubbing at normal or 2X speed
- Digital and analog audio inputs/outputs
- Component-video output
- Spatializer N-2-2 virtual surround

DIMENSIONS 17⅛ inches wide, 3⅛ inches high, 13 inches deep
WEIGHT 10½ pounds
PRICE $800
MANUFACTURER Hitachi America, Dept. S&V, 1855 Dornoch Ct., San Diego, CA 92154-7225; phone, 800-448-2244; Web, www.hitachi.com

PHOTOS BY TONY CORDOZA

HIGH POINTS

Easy DVD navigation.
Smooth DVD searching.
Superb CD recording menus.

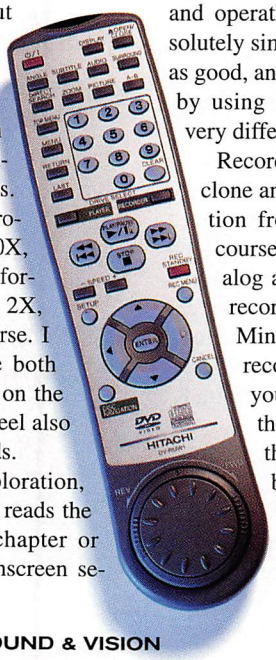
LOW POINTS

No progressive-scan video output.
CD dubbing is not bit-accurate.
Dissimilar DVD and CD menus.
Slow to initialize discs.

typical tiny rectangular black handset with tiny buttons and even tinier lettering, Hitachi gives you a silver paddle with big buttons and even bigger lettering. You won't need your reading glasses to use this baby.

I connected the DV-W1 to a world-class home theater system comprising a widescreen, all format Princeton AF3.OHD monitor, a Denon AVR-4800 receiver, and an M&K 150THX speaker system. To test its DVD capabilities I loaded a somewhat less than world-class disc: *Austin Powers: The Spy Who Shagged Me*. If you're old enough to remember the '60s, you're definitely too old (and probably too crotchety) to enjoy this film. However, it does convey very well how color-blind we all were back then: the shagadelic saturated oranges, reds, and lime greens were enough to make me gag, but the DV-W1 reproduced them as solidly as color bars. There isn't a lot of subtlety in the cinematography — no gentle gradations in luminance or murky shadows — so the video decoder wasn't particularly stressed. Still, the picture in this and other films I sampled looked good.

One of my peeves about DVD is that sometimes it's awkward to move through a disc and find a particular scene or add-on feature. In the DV-W1, Hitachi has addressed this in several ways. First, the +/– speed buttons provide ⅛, ½, normal, 2X, 10X, 30X, and 120X speeds in the forward direction and normal, 2X, 10X, 30X, and 120X in reverse. I found it convenient to have both slow-mo and fast-mo speeds on the same buttons, and the jog wheel also lets you select the same speeds.



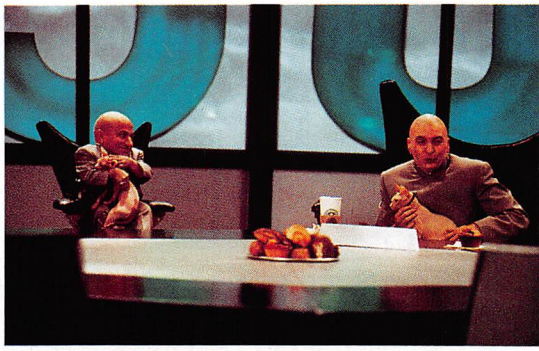
To further assist disc exploration, the Disc Navigation function reads the first few seconds of each chapter or scene and then creates an onscreen selection menu (independent of whatever menu functions are present on the disc) of six scene images. When you click on one of these images, that thumbnail scene begins to play (much cooler than static thumbnails). I appreciated all these navigation features, and I found the fast visual search to be very smooth, possibly because the DVD drive can spin at 2X. However, I should report that my review sample occasionally skipped on my factory-fresh *Austin Powers* disc.

The Spy Who Shagged Me has a 5.1-channel Dolby Digital soundtrack and, in fact, is encoded with Dolby Surround EX for a sixth, "back surround" channel (see "Eye on EX," page 121). The DV-W1 has an onboard Dolby Digital decoder, but I hooked up the player to my receiver's digital input so I could listen to the 6.1-channel mix. The film's highly irritating and irresistibly catchy theme song hit 110% on the perky scale, and the player fed it through to my receiver without a hiccup.

The DVD transport, by the way, also played all the CDs, CD-Rs, and CD-RWs I tried, as did the CD transport. Of course, the DV-W1 includes the Serial Copy Management System and can record only on "music use" blank discs on which a royalty has been paid. One distinct downer: the player was very slow to initialize loaded discs — it took about 25 seconds, for example, to recognize a CD-R or CD-RW.

The DVD menus are quite nice, but they can't hold a candle to the CD-recording menus, which are fantastic. They're credited to Italian designer Eduardo Galvani, and he deserves it. The look is very clean, and operation was both flexible and absolutely simple. I wish the DVD menu was as good, and the player would be improved by using similar menus instead of two very different ones.

Recording is a piece of cake. You can clone an entire CD or create a compilation from several different CDs. Of course, since the recorder has both analog and digital inputs, you can also record from non-CD sources like a MiniDisc player, a tuner, or even a record player. In the simplest case, you simply load a source CD in the left drawer and a blank CD in the right. Press the Dub Mode button to select "All Dub," and then press the Dub Start button. When the recording is finished, press the stop button and you're done. If you're in a hurry (and who isn't?), you can do a double-speed dub of one disc to another (although there is no playback sound during dubbing) by touching one button. In most recorders, you have to manually finalize the dub — this is when the recorder consolidates the temporary table of contents (TOC) into a final TOC. With the DV-W1, you can choose Auto Finalize so it does this for you as soon as the dub is finished.



The Hitachi DV-W1 had no trouble with the lurid colors or the Surround EX soundtrack of *Austin Powers: The Spy Who Shagged Me* on DVD.

To test the CD recorder's ability to perform slightly more complex recording chores, I made the same sonic pilgrimage as countless fans before me — I gathered up my collection of Pink Floyd discs and burned a compilation. First, I grabbed a previously finalized CD-RW (with some Floyd already on it) and unfinalized it (erasing the old TOC). Choosing songs from *Dark Side of the Moon*, *Meddle*, *The Final Cut*, *The Wall*, and *Delicate Sound of Thunder* (you probably know exactly which songs I picked), I loaded in the first disc and selected a programmed-dubbing mode — this is for when you don't want to copy an entire CD. After punching in the desired tracks, I waited while they were dubbed at double speed, then repeated the operation on subsequent discs until the compilation was complete. The DV-W1 handled the stopping, starting, and track numbering automatically.

When everything was done, I pushed the finalize button and waited about 2 minutes so I could audition the fruits of my labors, listening to both the originals and the dubs. Both versions sounded about the same to me, but overall I wasn't blown away by the CD recorder's fidelity. I couldn't put my finger on anything in particular, but the sound simply lacked the openness and impact of topnotch CD playback. Drums and cymbals didn't ring out, and the soundstage wasn't truly of Floyd-like proportions. Subsequent bench tests showed mediocre

"Does real wood sound better than vinyl?"

Matt Polk, Speaker Specialist

"It's common sense: A wooden speaker sounds better than a vinyl speaker. Or does it? Actually, a speaker's finish is just that—a thin layer covering the speaker enclosure. Most speakers are covered in 'wood colored' vinyl. Even so-called 'real wood' speakers usually use thin wood veneers instead of solid hardwood.

Cabinet Construction 101

What's really important to speaker sound is what's underneath the veneer or vinyl finish. Speaker enclosures should be rigid and non-resonant. Solid construction ensures a speaker that doesn't hum, sing or buzz along with your music. (Leave that to your tone-deaf brother-in-law.)

The most common enclosure material is particleboard: pressed and glued wood chips. Typical speakers use 3/4" particleboard; some are even thinner. Better speakers use a material called MDF ("Medium Density Fiberboard"): a denser, less resonant (and costlier) material than particleboard. The enclosures on my speakers have braced 3/4" MDF side walls. I like to make the front panel, or 'baffle,' even thicker—1 inch—to suppress unwanted cabinet resonance where it's most likely to occur; on the driver mounting surface.

The Knuckle Test

How do you tell if a speaker is well built? Retailers frown on customers taking display speakers apart to see what they're made of, so leave your screwdriver at home and use your knuckles. Knock on the side, front and back panels of the speaker. Listen for a non-resonant '*thud*,' (good) or a hollow '*boing*.' (Hint: '*boing*' is bad.) Pick the speaker up; heavier speakers aren't automatically better, but it improves the odds that the speaker is well made and accurate.

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If it doesn't sound any better than vinyl, why did we bother to wrap our new RT*i* Series bookshelf and floor-standing speakers in beautiful wood veneers? For the same reason my wife Amy made me get rid of my beanbag chair and black-light posters: *because looks count*. The new Polk RT*i* speakers are available in Maple, Cherry and Black Oak wood finishes. But you won't pay a premium for all this beautiful wood. Our in-house, state-of-the-art, computer-controlled woodshop allows us to give you real wood-veneer for the same price as vinyl. And since we know how much you care about sound quality, the new RT*i* Series include the most technologically advanced components we've ever offered. Hear (and see) them today at a Polk dealer near you. **Call (800) 377-7655 ext. 160 for more information** about the RT*i* Series speakers.

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The Speaker Specialists®

in the lab

DVD VIDEO PERFORMANCE

Measurements were made from a variety of DVD test discs, all through the player's composite-video output except as noted.

Setup level.....+7.5 IRE

Differential gain.....1.7%

Differential phase.....2.3°

Horizontal luminance frequency response
(re level at 1 MHz)
at 4 MHz.....–0.12 dB
at 5 MHz.....–0.12 dB
at 6 MHz.....–1.4 dB
at 6.75 MHz (DVD limit).....–1.7 dB

Onscreen resolution.....540 lines

Pixel cropping.....left/right, 0; top/bottom, 0

In-player letterboxing.....fair

Component-output level error
($Y/P_r/P_b$).....+9.9/+0.93/+0.67%

Component-output timing error
(P_r/P_b).....74/75 nanoseconds

DOLBY DIGITAL PERFORMANCE

All data were obtained from computer-generated Dolby Digital test signals incorporating dither, which sets limits on measured distortion and noise. Reference input level was –20 dBFS. Subwoofer output was on. All are worst-case figures where applicable.

Distortion at reference level
(THD+N, 1 kHz).....0.036%

Noise level (16-bit signal, A-wtd).....–72.5 dB

Excess noise (with signal)
16-bit (EN16).....+3.15 dB

Frequency response
front L/R.....20 Hz to 20 kHz +0.06, –0.03 dB
center/surrounds.....100 Hz to 20 kHz +0, –3 dB

Channel imbalance
(at reference output level).....0.28-dB spread

Subwoofer-output frequency response
–6 dB/octave rolloff above –3-dB point of 100 Hz

High-pass-filter frequency response
–12 dB/octave rolloff below –3-dB point of 100 Hz

Max. unclipped subwoofer output.....2.05 volts

Subwoofer distortion
(5.1 channels; 30-Hz, 0-dBFS signal; 31-dB dialogue normalization).....0.17%

ANALOG-INPUT RECORDING

Dub recorded in CD recorder but played back on the DVD player (see notes).

Frequency response
20 Hz to 20 kHz +0.23, –0.5 dB

Noise level (re –20 dBFS, A-wtd).....–64 dB

Distortion (THD+N, 1 kHz)
at 0 dBFS.....0.1%
at –20 dBFS.....1.0%

Linearity error (at –90 dBFS).....0 dB

Noise modulation.....1 dB

DIGITAL-INPUT RECORDING

Not bit-perfect at 44.1-kHz sampling frequency (see notes).

CD PLAYBACK, DVD PLAYER

All tests except defect tracking were made with ***Sound & Vision***'s test CD-RW using dithered signals. All measurements were made through the player's "mixed" analog outputs.

Frequency response
20 Hz to 20 kHz ±0.05 dB

Noise level (re –20 dBFS, A-wtd).....–72.6 dB

Excess noise (without/with signal)
16-bit (EN16).....+2.15/+2.35 dB
quasi-20-bit (EN20).....+17.61/+17.91 dB

Distortion (THD+N, 1 kHz)
at 0 dBFS.....0.005%
at –20 dBFS.....0.037%

Linearity error (at –90 dBFS).....0 dB

Noise modulation.....5 dB

Defect tracking
(Pierre Verany test disc).....1,000 µm

CD PLAYBACK, CD RECORDER

Frequency response
20 Hz to 20 kHz +0.1, –3.4 dB

Noise level (re –20 dBFS, A-wtd).....–64.3 dB

Excess noise (without/with signal)
16-bit (EN16).....+11.7/+11.9 dB
quasi-20-bit (EN20).....+30.7/+30.9 dB

Distortion (THD+N, 1 kHz)
at 0 dBFS.....0.024%
at –20 dBFS.....0.17%

Linearity error (at –90 dBFS).....–0.8 dB

Noise modulation.....0.4 dB

Defect tracking (Pierre Verany disc)....1,500 µm

Perhaps the most surprising thing about the DV-W1's CD-playback performance was that it was far worse from the CD-recorder side than when we played a CD in the DVD drawer, hence the two sets of CD-playback data. The recorder's playback performance, with its audibly elevated noise levels, was mediocre at best.

Playing CDs in the DVD drive produced far quieter, lower-distortion results, similar to the DV-W1's fine performance in multichannel Dolby Digital playback. DVD video performance was fine too, except for the relatively high timing errors on the component output, which may produce visible color-fringing effects. Digital signals dubbed at a 44.1-kHz sampling rate, whether from an external input or direct from a CD in the DVD drawer, was not bit-accurate. But the small measurable departures from bit accuracy should be audibly inconsequential for all but the most critical dubbing situations. I would ascribe them to a sampling-rate converter that remained in circuit when it didn't have to be. — *David Ranada*

playback performance from the recorder side as well.

To test the bit accuracy of the recorder, I dubbed some square waves. When I compared the dubbed data with the original data, I was surprised to see that the DV-W1 had not made bit-accurate copies at either normal or double speed, and the 2X speed added even more artifacts to the recorded signal than normal-speed dubbing. I double-checked the problem by dubbing a DTS-encoded song to a fresh CD-RW at normal speed; the dub would not decode through my Millennium DTS decoder, showing that the data had indeed been altered. While my music dubs sounded very close to the originals through the player's D/A converters, for some applications bit-perfect dubbing is important, and many users will be as disappointed as I was that the DV-W1 cannot provide that.

Just for kicks, I also checked the Synchronization and Auto-Track features for recording from an external digital source. They cause the recorder to start automatically as soon as playback starts and let track numbers be conveyed along with the music data. With an analog source, the recorder can automatically increment track numbers by sensing the pauses between tracks, but this isn't foolproof — it may insert a false marker during a quiet passage. To prevent this, you can insert track numbers manually. Like other CD recorders, this one lets you erase either an entire CD-RW disc or the last-recorded track, working your way backward through the TOC. Overall, thanks to its splendid onscreen CD menu, this is the easiest to use CD recorder I have tried.

Sluggish disc initialization and non-bit-accurate recording aside, the Hitachi DV-W1 is a likable component. Let's face it — sooner or later you'll need both a DVD player and a CD recorder. Why not solve both problems at once, save space, and make dubbing easy? DVD and CD go together as nicely as Marx and Lenin. If this player had a progressive-scan video output (a feature that will become increasingly important) and offered bit-perfect dubbing, it would have it all. But many users will settle for what's offered here. If you've put off buying a DVD player, think again. If you've shied away from CD recorders because you think they're too complicated, think again. And if you've recently named your puppy "Sputnik" — well, it's a free country. S&V

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The new C10 and C12 loudspeakers from MTX are definitely not for the cautious or faint of heart.



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B. It's fun to drive.

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B. A big lab that licks your face when you come in the door.

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B. Deliver aggressive, dynamic sound effects. It's what you need to satisfy your sci fi addiction.

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test report BY DAVID RANADA

Onkyo

TX-DS989 Digital A/V Receiver



We've tested a veritable fleet of flagship Onkyo A/V receivers over the last few years. Each has gone straight to the top of the audio order of battle by virtue of its versatility and audio quality. The latest, the TX-DS989, is no exception. Having both "7.1-channel" facilities as well as the high-quality circuit performance, surround sound processing, and bass management virtually guaranteed by its THX Ultra certification makes it unique among high-end receivers.

For playback using THX Surround EX (see "Eye on EX," page 121), Onkyo has provided two separate, full-capability amplifier channels to drive either one or two back surround speakers. THX recommends two, hence the *7.1*-channel designation. While you won't get 7.1 discrete channels from any signal medium available today, the receiver also incorporates discrete, line-level analog inputs for 7.1 channels and a corresponding set of preamp outputs to help forestall obsolescence when new formats arrive.

This receiver is chock full of other advanced and interesting features and circuitry — too many to go into much detail about here (see the "Key Features" listing on page 74). But starting with the 7.1-channel facilities, the abundant features make this the most future-proof A/V receiver I've yet encountered (past-proof too, with its phono and AC-3/RF inputs!). Not only does it have three component-video inputs (all able to accept progressive-scan or HDTV signals) and one component-video output, but the digital programming responsible for multichannel decoding can be updated with new software via an RS-232 connection. Even more futuristic are the provisions made in the TX-DS989's circuitry for future incorporation of IEEE 1394 (FireWire) high-speed data connections. And referring to its Dolby Digital, DTS, and multichannel-MPEG capabilities, Onkyo's promotional brochure claims that the receiver already "contains every decoder currently known to man."

The receiver, while large, is distinctly lighter than some of the other flagship models we've reviewed recently. The mass contributed by the traditional large heat sinks has been replaced by a fan whose variable speed is controlled by both the amplifier temperature and the level of the music. I fooled it into remaining audibly

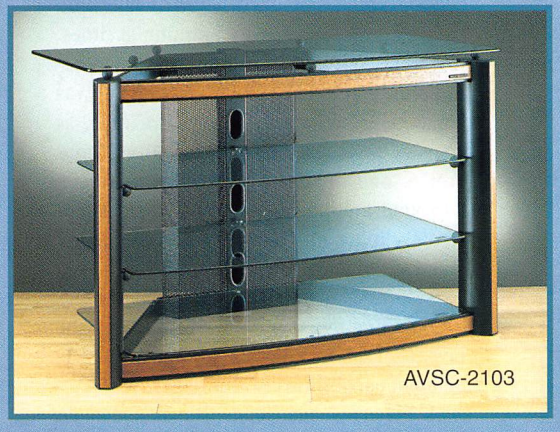
fast facts

RATED POWER 130 W x 7 into 8 ohms at 1 kHz with no more than 0.05% THD, channels driven individually; 130 W x 2 into 8 ohms from 20 Hz to 20 kHz with no more than 0.05% THD
DIMENSIONS 17⅛ inches wide, 7⅝ inches high, 17¾ inches deep
WEIGHT 48½ pounds
PRICE $3,200
MANUFACTURER Onkyo USA, Dept. S&V, 200 Williams Dr., Ramsey, N.J. 07446; phone, 201-825-7950; Web, www.onkyousa.com

PHOTOS BY TONY CORDOZA

Bell'O™ HOME THEATER FURNITURE





The WU-2100 Home Theater System is undoubtedly one of the most exciting pieces recently introduced by Bell'O, elegantly combining metal and glass with a real wood trim -- another fine addition from the deCarolis Collection.

The strikingly beautiful audio tower (ATC-2101) is designed to accommodate at least ten audio/video components. The rounded glass shelves, which provide a truly custom look, immediately catch the eye. Measuring 25"w x 60"h x 24"d the ATC-2101 is truly a worthwhile addition to your home theater.

Creatively designed as a companion piece for the ATC-2101 or to stand alone, the AVSC-2102 is an excellent choice for up to a 40" Direct View TV and at least four components. Dimensions are 43"w x 23"h x 23"d.

The AVSC-2103, also a companion piece to the ATC-2101, accommodates up to a 40" Direct View TV and at least six components. Dimensions are 43"w x 30"h x 23"d.

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In Canada: TEAC Canada Ltd., TEL 905-890-8008, FAX 905-890-9888
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key features

- THX Surround EX decoding with dual amplifiers for two back surround speakers
- THX Ultra-certified amplifier circuitry and surround processing
- Dolby Digital, DTS, Dolby Pro Logic, and MPEG-2 multichannel audio decoding
- 6 A/V inputs, all with S-video, 2 with tape loops
- 3 component-video inputs, all HDTV-capable
- 5 coaxial, 3 optical digital audio inputs
- AC-3/RF input for laserdisc player
- 7.1-channel line-level input and preamp output
- 3 audio-only inputs, 2 with tape loops
- phono input
- 2 composite-, 1 component-, and 2 S-video outputs
- coaxial and optical digital audio outputs
- 8 DSP ambience-enhancement modes; most also work on multichannel signals
- Backlit remote control with macro and learning capabilities
- 192-kHz/24-bit D/A converters for all channels
- RS-232 port for software upgrading
- IEEE 1394 (FireWire) connectivity with future plug-in
- Binding-post connectors for all speaker outputs
- 40 AM/FM presets
- 2 AC convenience outlets, both switched

on through a quiet passage only a couple of times (these occurred during some of the sudden "grand pauses" that are sprinkled throughout the symphonies of Anton Bruckner).

The programmable infrared remote control is nearly a masterpiece of ergonomic design. The buttons are extremely well differentiated in size, shape, location, and function. Facilities are provided for head-to-head programming of the infrared commands for non-Onkyo CD and DVD players, MiniDisc recorders, cable and satellite boxes, VCRs, and TVs. A built-in macro function will generate a sequence of infrared commands equivalent to as many as 16 separate button pushes. (This sounds real handy, but how many people do you know who have actually taken the trouble to program a single macro?)

Topping it all off are the remote's LCD readout of the component being controlled and the dim but adequate green backlighting for all control buttons. The only thing I found untoward about the operation of the remote was that the combined rocker switch/pushbutton used for navigating the onscreen menus sometimes confused rocking for pushing, and vice versa. But the fault here might lie with my fingers.

Using the remote to set up the DS989 (you can also use the duplicate menu controls concealed by a motorized door on the bottom of the front panel) was simple and nearly self-explanatory. I had to look only once at the manual (which, by the way, is well written and well organized). I used a full-blown THX Surround EX setup, with a powered subwoofer and dual back surrounds (both dipoles). With all that heavy artillery, I was not disappointed.

Pending the development of test tones for Surround EX testing by Dolby or THX (or me) — a process that would combine the difficulties of Pro Logic testing with certain complications imposed by Dolby Digital encoding — EX decoding has to be evaluated strictly by ear. In this case there's no need to worry, since I've never heard better back surround performance than that provided by the TX-DS989. When I listened to the back surrounds alone (by disconnecting the other speakers), the signals the receiver was feeding them were clearly as clean as those for the five other main channels, with ample power reserve and an extremely low background noise level.

When all the channels were fired up at once, as when I played the Surround EX-





***The Messenger: The Story of Joan of Arc*, a Surround EX-encoded DVD, showed off the 7.1-channel capabilities of the Onkyo TX-DS989 in spectacular fashion.**

encoded DVD of *The Messenger: The Story of Joan of Arc* (Columbia TriStar), I felt that the sonic results more than justified the cost of an extra pair of speakers and the greater complexity of setup. This film, one of the best-sounding EX titles yet released on DVD, uses the back surround channel nearly continuously, with full attention paid to its potential sonic/dramatic capabilities. Sometimes it carried ambience-type sounds that helped establish the dramatic locale, at other times it helped promote a seemingly 360° music mix, and at still others it helped carry front-to-back and side-to-side sound pans that tracked objects moving onscreen and off (galloping horses substituted for the usual whooshing space ships this time).

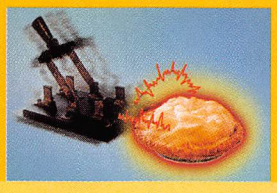
Most spectacular was when all these functions piled on each other, as in Joan's surrealistic visionary/hallucinogenic episodes in Chapters 21-22, a real sonic trip. Unfortunately, while the soundtrack of *The Messenger* — which for once contains neither exploding missiles nor laser blasts (both were rather uncommon in the 15th century) — can be overwhelming at times, it is not enough to save the movie from being a dramatic dud. My favorite scene was Chapter 23, in which Dustin Hoffman, as Joan's conscience (!), methodically deconstructs one of her visions with full back surround ambience — I found it unintentionally hilarious, probably because of my frustration with the movie at that point. Nonetheless, my conscience is clear in recommending *The Messenger* as one of the best DVDs for showing off the full, 7.1-channel capabilities of the TX-DS989.

A better, if overrated, film that can do the same for "plain vanilla" 5.1-channel playback is *Topsy-Turvy*, the story of Gilbert and Sullivan's tribulations in mounting the first production of *The Mikado*. Aside from including generous excerpts from the opera performed in a mar-



The $999 DigitalTheater 7000. Five satellites, powered sub, digital (5.1) electronics. Mmm. Tasty.

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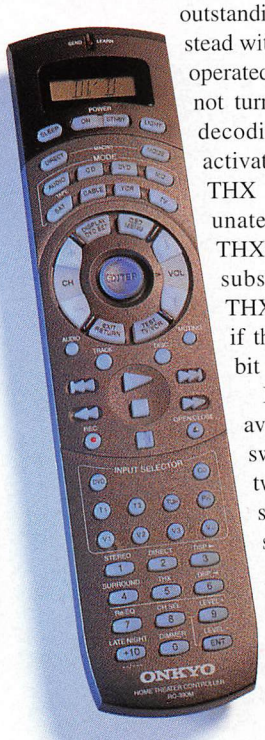
Superb THX Surround EX processing.
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Very low background noise.
Versatile remote control.

LOW POINTS

Fan sometimes audible.
Remote lacks certain capabilities.
Expensive.

velously evocative and realistic theater acoustic (note how "dry" the reverberant field is, not overly echoey as in what normally passes as "high-fidelity" sound for classical music), the opening sequence of the film is as fine an example of a front-channel imaging test as I've found in a movie soundtrack. You see an usher at the Savoy Theatre methodically lowering and raising each seat as he goes down a row. The noise of the seats' latching pans slowly and evenly from left to right across the front soundstage, or at least it did with the TX-DS989 operating in Dolby Digital mode — a further demonstration, if any were needed, of its imaging capabilities.

I found a few things not quite so pleasing. Most have nothing to do with the receiver's sound quality — which was always good to superb in surround sound, depending on the mode engaged, as well as outstanding in stereo — but instead with how specific features operated. For instance, I could not turn on the Surround EX decoding without having to activate the full panoply of THX features as well. Fortunately, once you turn on THX Surround EX, you can subsequently turn off the THX Re-EQ treble rolloff if the soundtrack sounds a bit too dull.



But no workaround is available if you want to switch back and forth between plain two-channel stereo playback and a surround mode to compare ambience-processed sound with the original. More annoying is the round-robin selection of surround modes, which makes impossible a direct comparison of two modes widely separated in the sequence. That's too bad, for the TX-DS989's ambience modes are unusually good. Onkyo's literature specifically mentions "superfluous, seldom-used, and gimmicky DSP modes" offered in competitive receivers (a valuation I agree with totally), and the TX-DS989 has avoided these. But while it's good — and rare — that some of the ambience modes allow you to turn off the processing in the front channels (which would otherwise add an echoey or distant quality to the original sound), it's not so good that the artificial reverberation imposed in some modes (like Orchestra) cannot be turned off altogether.

Take note, however, that these "flaws" are not only minor, but they may also be completely irrelevant to your listening tastes, especially if you don't often use ambience processing. I only bring them up because they're the biggest things I found "wrong" with the TX-DS989, which is not unique in having them. Everything else here is worth every one of the considerable number of pennies (3.2×10^5) you will spend on it. The sound quality in multichannel and stereo operation, the easy setup routines, the versatile hookup possibilities, and its resistance to obsolescence combine to make this receiver a rare find indeed. The TX-DS989 superbly upholds the tradition of excellence long established by Onkyo's top A/V receivers. **S&V**

in the lab

DOLBY DIGITAL PERFORMANCE

All data were obtained from computer-generated Dolby Digital test signals incorporating dither, which sets limits on measured distortion and noise. Reference input level is –20 dBFS, and reference output is 1 watt into 8 ohms, which was obtained with the volume control set to –3. Dialogue normalization in test signals was 27 dB. All speakers were set to "large" except for filter and subwoofer measurements, where they were set to "normal (small)." All are worst-case figures where applicable.

Output at clipping (1 kHz into 8 ohms)
one channel driven.....161 W (22 dBW)
five channels driven.....126 W (21 dBW)

Distortion at 1 watt
(THD+N, 1 kHz, 8 ohms).....0.044%

Noise level (16-bit signal, A-wtd).....–73.0 dB

Excess noise (with signal)
16-bit (EN16).....+2.15 dB

Frequency response
20 Hz to 20 kHz, +0.01, –0.15 dB

Channel imbalance
(at reference output level).....0.19-dB spread

Subwoofer-output frequency response
–24 dB/octave rolloff above –6-dB point of 80 Hz

High-pass-filter frequency response
–12 dB/octave rolloff below –3-dB point of 80 Hz

Maximum subwoofer output (at reference volume setting).....7.9 volts (no clipping)

Subwoofer distortion (5.1-channel, 31-Hz, 0-dBFS signal played at reference level; all channel trims set to 0).....0.07%

STEREO PERFORMANCE, DIGITAL INPUTS

All test signals were computer generated and incorporated dither. Volume setting for reference output level was –4. Except for tone-control tests, all measurements were made with tone controls off and speakers set to "large," subwoofer off. Stereo mode activated.

Output at clipping
(1 kHz, 8/4 ohms).....152 W (22 dBW)/335 W

Distortion at 1 watt
(THD+N, 1 kHz, 8/4 ohms).....0.034/0.035%

Linearity error (at –90 dBFS).....0 dB

Noise level (16-bit signal, A-wtd).....–75.5 dB

Excess noise (with/without signal)
16-bit (EN16).....+0.35/+0.35
quasi-20-bit (EN20).....+9.81/+9.81 dB

Noise modulation.....<0.5 dB

Tone-control range
100 Hz.....+8.7/–9.1 dB
10 kHz..... +9.3/–8.9 dB

Frequency response
44.1-kHz rate.....20 Hz to 20 kHz +0, –0.11 dB
96-kHz rate.....20 Hz to 44.1 kHz +0, –0.8 dB

My test bench is unaccustomed to such thoroughgoing excellence as the Onkyo TX-DS989 displayed. The Dolby Digital measurements, for example, showed no decrease in performance quality for the surround or center speakers, as we frequently find. All the channels had extremely low noise levels as well as very high maximum output power. The subwoofer output did not overload with worst-case test signals at our standard (loud) volume setting, and I had to turn the volume up 2 dB (to –1 on the display) to send the subwoofer output into clipping.

In stereo, the results were, if anything, even finer. The A-weighted noise level with 16-bit signals was only 0.2 dB above theoretical perfection, and 16-bit excess noise was only 0.35 dB above the ideal. We don't often see this kind of performance. If you use the digital output from a DVD or CD player, you can be confident that the TX-DS989 will give you all the sound quality from your discs that the encoded digits are capable of delivering. — *D.R.*

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The SubTwo's twin 10" subwoofers powered by a 500 watt Bob Carver/Sunfire amplifier etch the bass into your soul. NHT's unique Audio/Video switch technology produces tight, accurate, low end extension for two-channel audio reproduction or spine-tingling impact for multichannel home theater. The outboard processor enables connection of two SubTwo units for stereo operation.

The SubOne features a 10" woofer driven by 250 watts of Bob Carver/Sunfire amplification for powerful, refined punch. Its outboard controller provides volume and bass tuning functions as well as an A/V switch for music and movie modes.

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Pioneer

PDR-W739 CD Recorder/Changer



Hard on the heels of the first CD- recorder/changer combo to arrive at ***Sound & Vision***, the $599 Philips CDR785 (June 2000), comes one from Pioneer, the other big booster of home CD recording. The nifty PDR-W739 is also a three-disc changer with a single-tray CD recorder alongside, but where the Philips has a three-disc carousel, Pioneer opts for a three-way "stocker" mechanism that loads more or less like a conventional player but stores discs one on top of another. This makes for a tidy package little bigger than an ordinary single-disc player but with both changer convenience and recorder utility — cool!

Bypassing for the moment the recorder section on the righthand side of the front panel, the PDR-W739 looks conventional except for the unusually tall disc drawer and the two trios of controls marked 1, 2, and 3. The round buttons to the left of the drawer open it and roll out the corresponding disc tray. The illuminated rectangular buttons to the right select which loaded disc will be played.

Loading discs is straightforward (although unloading them from our first review sample was not — it ate my discs). Disc 1 goes on top, but a well-placed notch for the thumb makes it easy enough to get at Trays 2 and 3 — as long as you work with your right hand. Once all three trays are loaded, disc swapping is reasonably brisk, requiring a maximum of about 16 seconds to initialize and cue up a new disc, or around 12 seconds to switch back to a disc that it's already initialized.

PHOTOS BY TONY CORDOZA

fast facts

KEY FEATURES
- 3-disc changer plus single-disc recorder-player
- Records and plays CD-Rs and CD-RWs
- Double-speed dubbing with 2X audible monitoring
- Auto "synchro" recording from both digital and analog sources
- Coaxial and optical digital inputs
- Sampling-rate conversion permits digital dubbing from non-CD digital sources

DIMENSIONS 16½ inches wide, 5⅛ inches high, 15 inches deep
WEIGHT 14⅞ pounds
PRICE $725
MANUFACTURER Pioneer Electronics USA, Dept. S&V, 2265 E. 220th St., Long Beach, CA 90810; phone, 800-636-8368; Web, www.pioneerelectronics.com



Duplicating Sinatra's *Duets* on the PDR-W739 was a simple task, and the digital copy brought Ol' Blue Eyes back just as well as the original.

Changer usage is generally intuitive, with all the usual luxuries and conveniences except for three discs instead of five — or 200. You can program a playlist from all three CDs or randomize play from either one disc or all three (though the latter trick requires first creating a playlist comprising all tracks on all discs). There's also a Relay Play mode that runs through all three discs in order from start to finish, followed by the one loaded in the recorder. Unfortunately, there's no way to create a playlist, whether sequential or random, from among all four discs. In partial compensation, Pioneer's stocker mechanism lets you swap out one or two discs while a third plays uninterrupted.

The recorder drawer has its own set of transport controls, identical to the changer's. There are also seven small keys for engaging various recording options, selecting the desired input (digital or analog), and so on. The record-level knob controls both channels, with detents at each increment and a push-in switch that instantly reverts to the unity-gain setting. The display shows the level setting in decibels.

Around back the W739 has a complete contingent of connectors, with pairs of coaxial and optical digital inputs and outputs as well as conventional analog line-level inputs and outputs. There's also a control input to connect a compatible Pioneer receiver for integrated remote control.

Connecting the W739 into my system was very easy, and I was up and recording in a few minutes. Pioneer has made the basic recording tasks — such as copying an entire CD, one or more tracks, or a compilation of tracks selected from the three discs loaded in the changer side's three trays — very simple. Load a disc or discs in the changer, a blank write-once CD-R or rewritable CD-RW in the recorder, press the Copy Mode key once for disc-copy or twice to reach Program Copy mode to record a playlist you've set up, and then press the start key. The whole process could hardly be simpler.

Digital copying always defaults to 2X speed, and the analog and headphone outputs delivered surprisingly clean-sounding, double-speed monitor signals — pitched one octave up, of course. (If you want to listen to music while recording it, you can manually select normal-speed recording.) There's a handy display mode that keeps track of remaining record time to ensure you don't over-program a compilation disc. Recording tracks from more than three discs requires copying them one at a time, however, so you can remove and replace CDs in the changer side.

The entire process of copying a whole CD or a compilation of tracks could hardly be simpler.



The Pioneer's record-level knob lets you boost the signal to the recorder by as much as 12 dB or cut it by up to 60 dB (!), whether the source is internal or external, digital or analog. This feature is useful for level-matching songs on a mix disc so that it stays at a similar average level. Its use demands more caution than beginners may have, however. Boosting a typical pop CD by even a couple of decibels will induce dozens of digital overloads every minute, resulting in grossly audible distortion or clicking. Pioneer's generally useful manual warns against ever letting the red segments of the level meter light up, but a bit stronger wording, with an explanation that commercial pop CDs are routinely mastered to within a fraction of a decibel of "full-scale" digital level, would not have been out of place. Of course, the level control is a necessary tool for dubbing from analog sources, and Pioneer's is well designed.

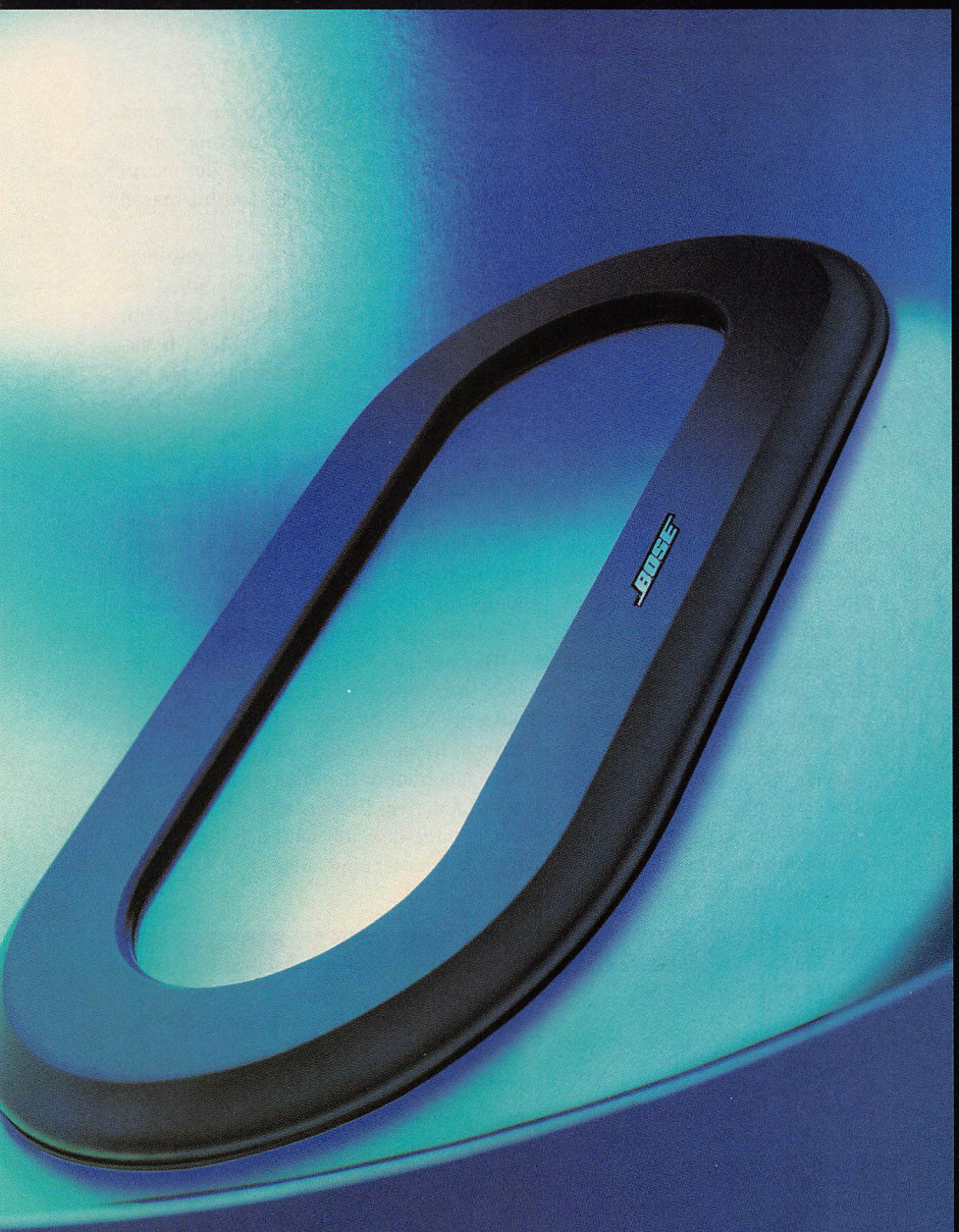
The W739 makes bit-accurate copies — that is, perfect digital clones of a digitally dubbed original — as long as the level control is set at 0, as I confirmed by copying a DTS-encoded track. The dub played fine through my preamp's DTS decoder; an otherwise identical dub with the level set to –1 dB did not, just as the manual warns. (The same would hold true for HDCD-encoded discs; these would play back normally but without any HDCD decoding.) If you try to make a copy of a commercial CD from a digital dub, the Pioneer dutifully switches to the *analog* signal of its CD changer. However, this is indicated only by a tiny "ANA" flag in the multifunction display; a bit "louder" alert would be in order. That said, the analog copies I made sounded very close to the digital ones, though the noise floor (on highly dynamic sources like solo piano) rose audibly in critical headphone listening.

Of course, the Pioneer W739's digital copies were indistinguishable from the originals. No matter what I dubbed, the copy, whether played in the recorder try or the changer, sounded identical to the master. For example, on the DCC gold CD of Sinatra's *Duets* (GZS-1053), all the complex hall air, soundstaging, and other spatial cues in the Carly Simon effort ("Guess I'll Hang My Tears . . .") retained identical emphasis and position, and the distinct microphone sibilance on The Chairman's vocals remained unchanged.

Sonically speaking, I had no complaints

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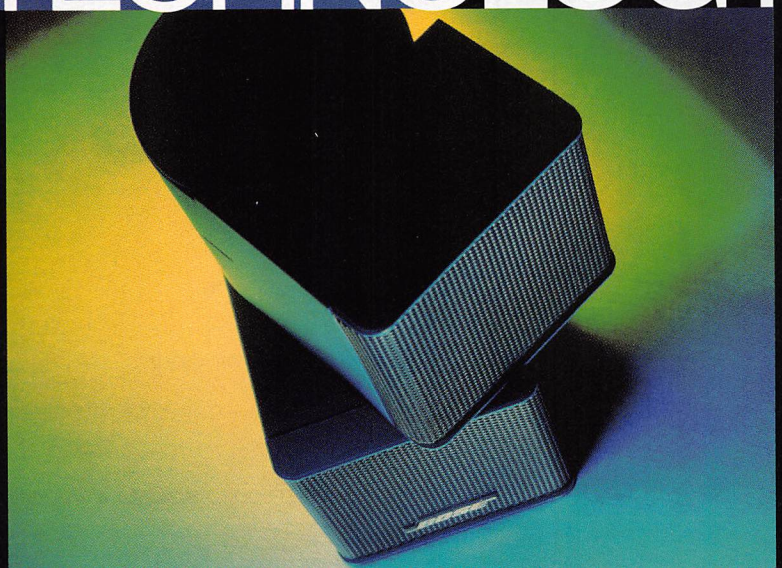
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HIGH POINTS

Easy to make "mix" discs from CDs in changer.
Easy recording in general.
Both optical and coaxial digital outputs.

LOW POINTS

2X is fastest speed.
Automatic level compensation not defeatable in some modes.
Uninspired remote-control design.

about the Pioneer as a CD player. It sounded quiet, crisp, and detailed with all discs. Operationally, I did discover a couple of interesting quirks. First, the changer side is able to play both CD-R and CD-RW discs, even unfinalized ones, which is unusual — though it takes far longer to read such an unfinalized disc's table of contents and obey any track-locate commands. Second, pressing either side's play key immediately switches output to that transport, even interrupting playback from other side. I worry that with two identical sets of transport controls, a user might get mixed up and touch the wrong one. However, since most transport controls are disabled during recording, screwing up a dub for this reason isn't likely.

In ease-of-use terms, Pioneer's design is good though not great. The supplied remote is a compact model crowded with same-size black keys on a black background with dim gold lettering — not my cup of tea at all. The front panel — which is where you must work during recording anyway — is a good deal better, with a generally sensible control layout. However, the transport keys on the changer side are placed below the open changer-drawer, which makes skipping tracks (or whatever) while the drawer is open to load or swap out discs an awkward proposition.

But overall, Pioneer's recorder/changer is a snap to use and makes copying CDs absurdly easy. Its value quotient is equally strong. Its discounted "street" price isn't very much more than that of a good conventional five-disc changer, but it buys you a three-disc job with a fully capable CD recorder tagging along. Not a bad deal at all. S&V

in the lab

DIGITAL-INPUT RECORDING, CD-TO-CD

Bit-accurate at CD-standard 44.1-kHz sampling rate with gain control set to 0 dB.

ANALOG-INPUT RECORDING

All output measurements were made through the player's digital output and represent how a disc recorded on the PDR-W739 will play back on a theoretically "perfect" CD player. For all measurements except input sensitivity, the record-level control was set to produce a 0-dBFS recording from a 2-volt input.

Frequency response
20 to 20 kHz +0.09, –1.36 dB

Noise level (A-wtd).....–64.9 dB

Distortion (THD+N, 1 kHz)
at 0 dBFS 0.007%
at –20 dBFS 0.06%

Linearity error (at –90 dBFS) .....–4 dB

Noise modulation.....5 dB

CD PLAYBACK, ANALOG OUTPUTS

Frequency response
20 Hz to 20 kHz +0.9, –0 dB

Noise level (A-wtd).....–75.2 dB

Excess noise (with/without signal)
16-bit (EN16).....+0.5/+0.4 dB
quasi-20-bit (EN20).....+10.9/+10.7 dB

Distortion (THD+N, 1 kHz)
at 0 dBFS 0.02%
at –20 dBFS 0.02%

Linearity error (at –90 dBFS) .....–1.3 dB

Noise modulation.....0.3 dB

Defect tracking
(Pierre Verany test disc).....1,500 µm

Except for analog-input recording, Pioneer's changer/recorder combo performed very well overall. CD-playback tests revealed exceptionally low-noise, distortion-free signals, which is pretty much the norm these days thanks to low-cost/high-accuracy ultra-oversampling (1-bit) converters: witness the W739's outstanding linearity, noise, and distortion numbers. The only surprise was from the playback frequency response, which rose nearly a full 1 dB over the top octave, quite an unusual result. (Perhaps this is why Danny Kumin characterized its sound as "crisp and detailed.")

Recordings made through the analog input, on the other hand, were characterized by background noise that increased in level as the input signal fell below –60 dBFS. This led to a measured noise level approximately 10 dB worse than average and unusually high noise modulation. And the noise itself was audibly "colored." These effects were heard primarily as distinct grunginess during the reverberant "tails" of wide-dynamic-range music.

— David Ranada

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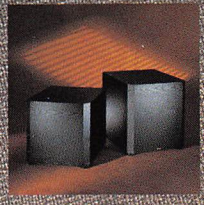
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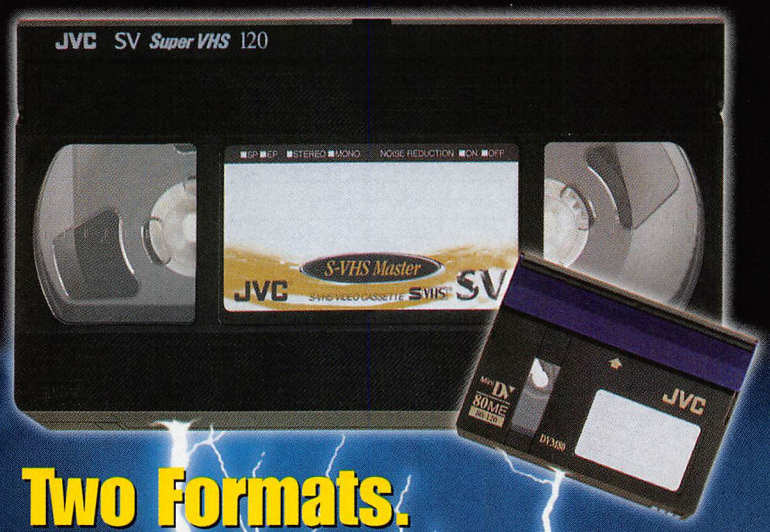
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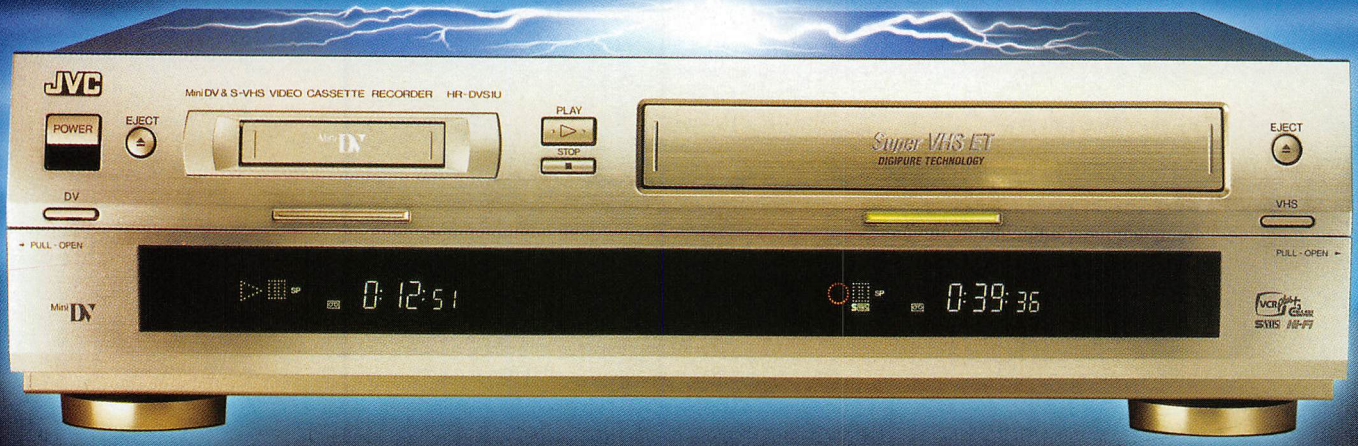
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Flattening the Dish

SatCom PASSPort flat-panel satellite antenna

Summertime, and the living is easy. Unless, of course, you don't have TV. Now, I have to admit that I could live without TV and often go without it during the week. But the rest of the family doesn't share my ambivalence toward the tube, especially, I'm sorry to say, my 5-year-old son — who, it seems, needs his daily fix of Pokémon just to survive.

So while normally I'd be inclined to force my back-to-nature views on my son to prove how much fun a camping trip can be without a television, my more rational side decided that bringing a TV along for our first camping trip might not be such a bad idea. I already own a power inverter that lets me power appliances from my car's electrical system. There was just one problem — the campsites I like to visit are well out of range of TV stations. But a new $350 portable flat-panel satellite antenna system from SatCom, the PASSPort Mini-Plus MP-2000-PKG, seemed just the ticket to taking TV on the road.

The PASSPort system starts with the antenna itself, a 5-pound, 12 x 16-inch rectangular panel that's mostly just over ¾ inch thick. At the LNB (low-noise block downconverter), its thickness increases to about 1½ inches. Also supplied is a portable mount — basically a C-clamp with a standard camera-tripod thread that mates with the antenna. The clamp hooks just fine to picnic tables, park benches, deck railings, and almost anything else that's stable but not too thick. (Tree branches that are thin enough to accept the C-clamp will sway too much to be useful as mounts.)

Three cables are supplied: a 30-footer for connecting a satellite receiver to the antenna, a 10-footer for connecting the receiver to a TV set's RF input, and a 1-foot-long jumper for connecting the supplied Digital Satellite Seeker signal-strength meter. A small magnetic compass is included to aid in finding the right satellite. Finally, there's a convenient soft-sided carrying case to keep the system together between trips or in the off-season when the summer house is closed up.

As with other direct-broadcast-satellite (DBS) antennas, the PASSPort's LNB — the gadget that converts the microwave signals from the satellite into lower-frequency signals that can be shipped over coaxial cable to a receiver — requires a source of 11.5 to 19 volts, which is typical of what is available at a satellite receiver's antenna connector. As a result, the PASSPort should work with any Dish Network or DirecTV receiver. Unlike other DBS antennas, the PASSPort doesn't use a parabolic dish to reflect captured satellite signals to the LNB. Instead, it uses a phased array of elements — technology more commonly found in military radar applications — to achieve its flatness.

How easy you'll find setting up the PASSPort will depend mostly on whether you've ever aimed a satellite dish before. The user's manual leaves most of the aiming instructions to your satellite receiver's user's manual. While that may seem like a shortcut, it is eminently practical considering that DBS receivers will give you pointing coordinates if you key in the ZIP code for wherever you're located (which I hope you found out before you started on your trip). I found that once I determined with the compass that I had a clear line of sight to the satellite, installation was a breeze — assuming I could find a convenient surface to attach the C-clamp. When I couldn't, I got out my light-duty camera tripod, which worked well except in heavy wind, when it swayed enough to cause the picture to break up.

The Digital Satellite Seeker is designed to be hooked in-line between the satellite receiver and antenna during installation. Although it worked just fine, it seemed a bit superfluous to me. After all, every satellite receiver has a built-in signal-strength meter. And while it seemed nice, in theory, to have a meter right at the "dish" while I was aiming it, I found that listening to the receiver's audible meter was all I really needed to get everything aimed properly. If I was installing the antenna on my roof — SatCom also offers fixed-mount flat-panel antennas — I'm sure I'd feel differently.

So how did the antenna perform? Judging from the TV image, it equaled the performance of my professionally installed, roof-mounted Dish Network antenna. Judging from my receiver's signal-strength meter, however, the various ground-mount installations I tried all came up just a little short. I was able to achieve readings of 85 to 90 on the meter, compared with a typical reading of 95 for my roof-mounted dish. In the grand scheme of things, that's insignificant because both deliver the same quality of picture. While I'd certainly want the higher reading with a permanent installation to ensure that rain fade won't be a problem in even the heaviest thunderstorm, for a temporary one it doesn't matter. On the other hand, in terms of portability, the PASSPort Mini-Plus beat my roof-mounted dish, pardon the pun, flat out.

— Brian C. Fenton



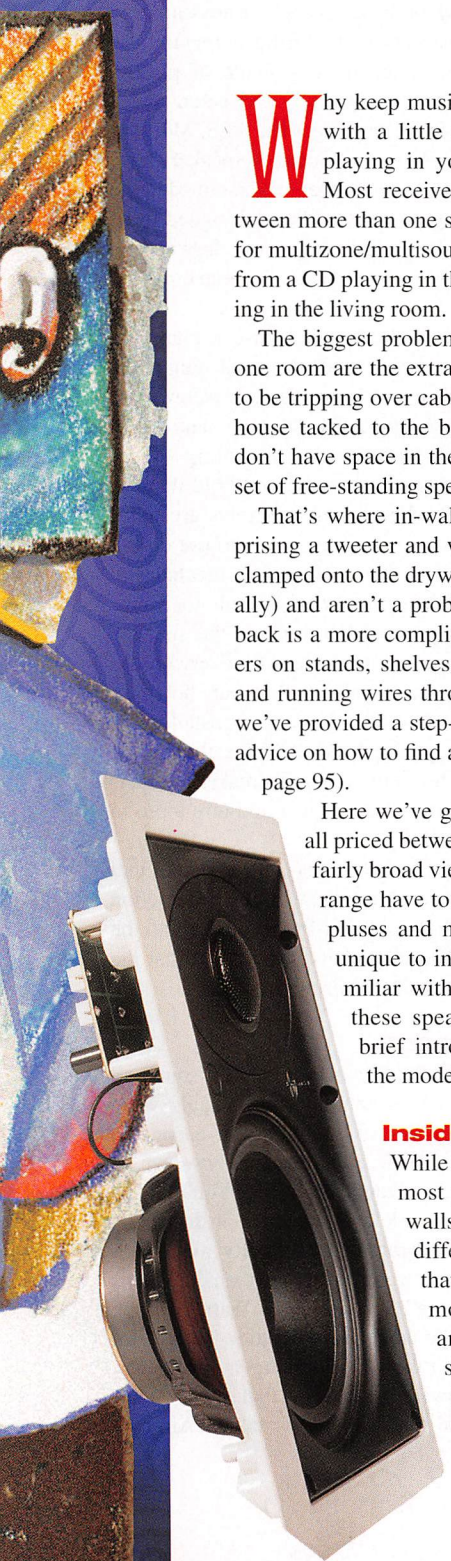
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SONANCE 622

THE IN CROWD

10 in-wall speakers that let your music mingle

by Tom Nousaine



Why keep music confined to the living room when, with a little effort and money, you can have it playing in your den, bedroom, or kitchen, too? Most receivers let you hook up and switch between more than one set of speakers, and some even allow for multizone/multisource operation so you can have music from a CD playing in the kitchen while there's a DVD playing in the living room.

The biggest problems with sending music to more than one room are the extra wires and speakers. You don't want to be tripping over cables or have them running all over the house tacked to the baseboards. And a lot of people just don't have space in their kitchens, bedrooms, or dens for a set of free-standing speakers.

That's where in-wall speakers come in. Typically comprising a tweeter and woofer mounted to a faceplate that's clamped onto the drywall, in-walls keep a low profile (literally) and aren't a problem under foot. Their biggest drawback is a more complicated installation than setting speakers on stands, shelves, or the floor. Breaching your walls and running wires through them is no joke, which is why we've provided a step-by-step installation guide as well as advice on how to find a qualified installer (see "The Setup," page 95).

Here we've gathered together ten in-wall models, all priced between $350 and $500 a pair, to provide a fairly broad view of what such speakers in this price range have to offer. While each model has its own pluses and minuses, they all share certain traits unique to in-walls — traits you might not be familiar with if you haven't encountered one of these speakers before. So let's begin with a brief introduction to in-walls before judging the models at hand.

Inside In-Walls

While free-standing speakers — the kind most people use for listening — and in-walls are both technically speakers, the differences between them are so great that comparing one with the other is almost like comparing apples and oranges. Each type of speaker is designed to perform under radically different circumstances, and the obstacles in the way of producing good sound are much more dramatic for in-walls than for more traditional models. However, because the way sound is produced by a free-standing speaker is really the only standard we have, it's the one I've used for evaluating the in-wall models in this survey.

The complex interaction between a free-standing speaker's drivers, crossovers, and cabinet determines its efficiency, tonal balance, and dynamic capability. It's different with in-walls because their designers have no control over one of the most significant factors in how their speakers will sound — your walls.

When an in-wall speaker reproduces bass, the wall vibrates, acting like a giant diaphragm. Since the wall's motion is out of phase with that of the speaker cone, the low-frequency soundwaves tend to cancel the speaker's low-bass output. And turning up the bass to compensate causes the wall to vibrate more. Wall vibrations also produce upper-bass sound, which combines with the speaker's higher frequencies to create a boomy, "jukebox" effect.

I've found that most in-wall speakers — especially the kind of midprice models considered in this survey — are best suited for background listening, where wall-interaction problems are at a minimum. And, while adding a subwoofer does kind of defeat the point of having "invisible" speakers, a sub can help your in-walls sound better at higher volumes by reducing wall flexing at lower frequencies since the bass will come from the sub and not the in-walls.

When in-walls are played loud, wall radiation can affect not only the bass but the stereo imaging as well. I used "You Look Good to Me" on the Oscar Peterson Trio's *We Get Requests* (Verve) to evaluate the speakers in this comparison. The recording's soundstage is very simple, with the drum kit on the left, the piano in the center, and the acoustic bass on the right. The instrumental positioning was fine while Ray Brown plucked his bass, but when he played it with a bow, the interaction between the speakers and the wall made his instrument seem to move from the right to directly on top of the piano. This happened with every speaker in our group.

Wall vibrations can also have an impact on how well the speaker reproduces ambience information. While the in-walls here did a decent job of recreating ambience at low volumes — which is all you need from a system that's mainly for background music — the effect always collapsed into the individual speakers when I increased the volume.

It's important to cut in-walls some slack. They just don't

PHOTOS BY TONY CORDOZA; ILLUSTRATIONS BY BILL VILLARREAL



have the same room to breathe as floor-standing or bookshelf speakers. And there's one thing in-walls do really well: because the fronts of the drivers are flush with the wall, they tend to deliver uniform sound over a broad area, which is perfect for parties where people are moving around the room.

There's one more thing about in-walls that you should consider before deciding whether they're right for you — bleed-through. A standard wall made of ⅝-inch sheetrock on both sides over 2 x 4 studs will block about 33 dB of sound at 125 Hz, effectively keeping the music in the room. But putting a speaker into the wall reduces its sound-stopping ability by half. Some in-walls can sound almost as loud in the room behind them as in the one where the music is playing.

Are in-wall speakers suitable for home theater? If you don't use a subwoofer, you'll have to keep the volume lower than the level at which most people like to listen to movie soundtracks. And even with a subwoofer, you'll find that the ambient sound — especially in the surround channels — will tend to cluster near the speakers when they're played loud, making it difficult to create the kind of diffuse sound field you want from the surround speakers. However, some expensive in-walls have the potential to be decent home theater satellites — especially those with sealed sub-enclosures and, for dipole surrounds, angled front panels that project the opposing drivers out from the wall's surface.

Walls of Sound

The in-walls I evaluated for this report included the AES 225S ($400 a pair), AudioSource IW-Two ($360 a pair), Boston Acoustics 381 ($500 a pair), Monster Sound InvisiSound 8000 ($400 a pair), MTX Blueprint Series 620WE ($440 a pair), NHT SuperOne Ci ($350 a pair), Niles HD650 ($400 a pair), Paradigm AMS-300 ($500 a pair), RBH Sound TK6 ($360 a pair), and Sonance 622 ($375 a pair). While AudioSource, Boston Acoustics, NHT, Paradigm, and RBH are better known for their free-standing speakers, the other companies specialize in in-walls.

I installed each pair of speakers in my listening-room wall, with the center of the panels 62 inches from the floor. After doing my standard measurements on each pair, I then listened to it playing several familiar music CDs while sitting about 14 feet from the wall (see "In the Lab," page 92, for details).

All of the speakers here are similar in construction, featuring a rectangular front panel, usually made of plastic, that holds a woofer, a tweeter, and a snap-in white grille. (The AES, Monster, MTX, RBH, and Sonance speakers have pivoting tweeters that can be aimed at the listening position.) All are designed to be installed in a hole cut in the drywall and come with a template for marking the cutout.

Most of the speakers use a clamping mechanism that holds the panel snug to the wall when the front-mounted screws are tightened. The AES, Monster, and MTX speakers, however, use "mounting wings" that swing into position and hold them to the wall when the front screws are tightened. These wings are easier to use during installation than a clamping mechanism, but they're sometimes difficult to "unrotate" if you need to remove the speaker. The mounting techniques for every speaker here seem well thought out, however, and all are relatively easy to install — as long as you're handy! (If the thought of cutting holes in your walls makes you nervous, do yourself a favor and hire a pro to do the job.)

Every model comes with brackets that you can use during new-home construction to attach the speaker frames directly to the studs. These brackets help ensure that the speakers will stay firmly in place.

AES 225S

The AES 225S is one of the best sounding in-walls I've encountered. Vocals were generally free of coloration at reasonable volumes. With solo vocalists, however — like Tracy Chapman on "For You" (*Tracy Chapman*, Elektra) — some wall "echo" could be heard at practically any level. This echo was also evident on ZZ Top's "LaGrange" (*Tres Hombres*, Warner Bros.), where the added reverberation on the rim shots had the wall doubling as a sideman. (Ry Cooder has a song that goes, "Ain't you glad that walls don't talk? / Ain't no



tellin' what they might say." Guess what, Ry — they *can* talk, and did with every speaker in this comparison!)

At higher volumes the sound tended to cluster at the left and right speakers, with the sound of the instruments never extending beyond the speakers, but that's a common problem with in-walls. On the other hand, the AES did reproduce music at fairly loud levels (95 dB SPL) with no obvious wall effects except reduced bass — something most of its rivals couldn't do.

AudioSource IW-Two

The AudioSource IW-Two did best with heavily produced pop recordings, like Jennifer Warnes's *Famous Blue Raincoat* (Cypress), where there is no real-world acoustic reference because the "performing space" is artificially created in the record-



ing studio through the use of pan pots and equalization. This approach flattens the soundstage, which tends to cover up the speakers' lack of depth and spaciousness. Turning up the volume on the IW-Two caused the bass to sound mushy and accentuated the higher frequencies, adding sibilance to the female vocal on "Tiden Bara Gar" (*Test Record 1: Depth of Image*, Opus 3) and making the triangle sound too prominent. It also gave the sound a squeaky quality — as in, fingernails on a chalkboard! I wasn't able to play this speaker above a moderately loud 85 dB SPL without having the wall vibrations cancel out the bass, which made the music sound thin.

Boston Acoustics 381

Since the Boston Acoustics 381 is weatherproofed, you don't have to keep it confined indoors but can install it by the pool, on your boat, or even in your sauna. The fit, finish, and detail are first-class, which is what you'd expect from one of the most expensive speakers in the lot.

Its sound was first-class, too, for an in-wall, with unusually flat frequency response. At moderate levels, the 381 produced smooth and clean sound. It even played a little louder than most of the competition before the effects of wall vibration intruded. The 381 provided a good sense of ambience up to about a borderline-loud 75-dB peak SPL, after which it became just another in-wall.

It was just another in-wall speaker in the bass department, too. The kick drum on Quincy Jones's "Places You Find Love" from *Back on the Block* (Warner) is meant to sound like a distant heartbeat. When I turned the volume up, though, the sound radiating from the wall cancelled out the bass fundamentals, dulling the sound of the drum.

Monster Sound IS8000

Unlike the other speakers here, the InvisiSound 8000 has a front-panel level control that you can use to fine-tune the treble response to your room. Turning the control all the way down to the –5 position essentially turns the tweeter off, while ro-



Manufacturer/Model	Price	Tweeter	Woofer	Mounting type	Connectors	Faceplate size
AES 225S 6400 Youngerman Circle Jacksonville, FL 32244 904-777-0704	$400 a pair	1-inch soft dome	6½-inch polypropylene cone	rotating wings	Euro-connector screw terminals	8 x 11½ inches
AudioSource IW-Two 1327 N. Carolan Ave. Burlingame, CA 94010 800-435-7115 www.audiosource.net	$360 a pair	1-inch soft dome	6½-inch polypropylene cone	rectangular metal frame	spring clips	9 x 12⅜ inches
Boston Acoustics Model 381 300 Jubilee Dr. Peabody, MA 01960 978-538-5000 www.bostonacoustics.com	$500 a pair	1-inch Kortec soft dome	8-inch copolymer cone	plastic rectangular bracket with threaded inserts	multiway binding posts	8½ x 11¾ inches
Monster Sound InvisiSound 8000 455 Valley Dr. Brisbane, CA 94005 415-840-2000 www.monstercable.com	$400 a pair	1-inch Kevlar dome	8-inch Kevlar cone	rotating wings	multiway binding posts	10 x 13¾ inches
MTX Blueprint Series 620WE 4545 E. Baseline Rd. Phoenix, AZ 85040 800-225-5689 www.mtxaudio.com	$440 a pair	1-inch soft dome	6½-inch polypropylene cone	rotating wings	push-type	10⅛ x 14 inches
NHT SuperOne Ci 527 Stone Rd. Benicia, CA 94510 800-648-9993 www.nhthifi.com	$350 a pair	1-inch soft dome	6½-inch cone	rectangular plastic bracket	spring posts	9 x 13⅛ inches
Niles Audio HD650 12331 SW 130th St. Miami, FL 33186 800-289-4434 www.nilesaudio.com	$400 a pair	1-inch hybrid dome	6½-inch mica-filled polypropylene cone	rectangular plastic frame and bracket	spring clips	8¾ x 11¾ inches
Paradigm AMS-300 Division of AudioStream 11-919 Fraser Dr. Burlington, Ontario L7L 4X8 905-632-0180 www.paradigm.ca	$500 a pair	1-inch titanium dome	8-inch mineral-filled polypropylene cone	rectangular metal bracket	spring clips	9 x 12⅞ inches
RBH Sound TK6 976 N. Marshall Way, Bldg. 2, Unit 4 Layton, UT 84041 800-543-2205 www.rbhsound.com	$360 a pair	1-inch aluminum dome	6½-inch woven fiberglass cone	rectangular plastic bracket	spring clips	8¾ x 12 inches
Sonance Model 622 212 Avenida Fabricante San Clemente, CA 92672 800-582-7777 www.sonance.com	$375 a pair	1-inch cloth dome	6½-inch polypropylene cone	twin plastic brackets	spring clips	8¼ x 12¼ inches

tating it all the way to the right to the +5 position elevates the response about 10 dB at 10 kHz. I got the smoothest response at the +4 setting, but it could be different in your room. Swiveling the tweeter itself, to "aim" the higher frequencies, had virtually no effect on how the music sounded at the listening position.

Vocals had a reverberant, boxy quality, and many instruments were noticeably colored. On Harry James's "More Splutie Please" off *King James Version* (Sheffield), for example, the trumpets and trombones sounded almost like reeds. And the effects of wall vibration were especially obvious on "Tiden Bara Gar," causing the music to cluster tightly between the speakers, making it sound almost monophonic. While the IS8000 was able to play relatively loud, it caused sound to radiate from the wall even at fairly low volumes.

MTX Blueprint Series 620WE

Unlike the other speakers here, the MTX 620WE has an enclosure, affixed to the mounting frame, that covers the wires and the backs of the drivers. This protects the speaker from dirt, dust, and other debris. In addition, there are small vertical and horizontal bubble levels mounted in the faceplate to help you position the speaker — a nifty feature that ought to be standard with every in-wall.

As I increased the volume, the 620WE became more and more sibilant, and the speaker's small enclosure tended to stifle the bass. This made the tuba sound anemic on Carla Bley's "Copyright Royalties" from *Social Studies* (BMG), while the brushes and the cymbals sounded hard and overly prominent. Thanks to its enclosure, the MTX displayed somewhat less wall inter-



Frame/Grille	Warranty	Special features
off-white frame, paintable white metal-mesh grille with cloth insert	5 years (parts only)	pivoting tweeter
white paintable frame, white paintable metal-mesh grille	5 years parts and labor	
white plastic frame, white paintable metal-mesh grille	1 year parts and labor	
white frame, paintable white metal-mesh grille with foam filter	5 years parts and labor	pivoting tweeter with level control
white paintable plastic frame, white aluminum-mesh grille with Fiberfil insert	10 years parts and labor	pivoting tweeter; enclosure for drivers
white paintable frame, white paintable metal-mesh grille	5 years parts and labor	
white paintable frame, white paintable metal-mesh grille	2 years parts and labor	"presence" control
white paintable metal frame, white paintable metal-mesh grille	5 years parts and labor	
white paintable plastic frame, white paintable metal-mesh grille	25 years parts and labor (provided by dealer)	pivoting tweeter
white paintable plastic frame, white paintable metal-mesh grille	5 years parts and labor	pivoting tweeter

action than the other speakers here, but because its cabinet was attached to the drywall, it still transmitted vibrations into the wall's structure. At moderate listening levels (75-dB SPL), I could place my ear to any wall in the house and hear pretty much the full program. Standing away from the walls, I could still hear the music in every room — a problem that only got worse with the other in-walls.

NHT SuperOne Ci

The NHT SuperOne Ci had the kind of smooth, flat frequency response normally associated with good-sounding speakers. At moderate levels it sounded natural and pleasant, reproducing vocals and acoustic instruments clearly and cleanly. It did better than most of the other speakers in the



group at retaining open ambience as the volume increased, but it still fell victim to the wall-interaction problems that bedeviled its rivals. I had to keep the volume relatively low (below a 70- to 75-dB SPL) to prevent the instruments from shifting location on "Tiden Bara Gar" and "You Look Good to Me." While the NHT could play at a loud 90 dB without making the wall go "boink," it still created plenty of wall chatter that gave the bass a muffled, one-note character.

The owner's manual has several suggestions on how you can reduce wall interaction, including bracing the studs and stuffing the wall cavity. But I've tried all of these methods — even using double layers of sheetrock — and have found that the only way to eliminate wall chatter from an in-wall speaker is to enclose it in a separate cabinet that's totally isolated from the wallboard. It doesn't hurt to follow NHT's suggestions, however. They'll reduce the effect somewhat — just don't expect miracles.

Niles HD650

Like the Monster Sound IS8000, you can adjust the tonal balance of the Niles HD650 to compensate for room acoustics. But instead of a continuously adjustable front-panel knob, Niles provides a two-position "presence" control on the speaker's back panel for use in rooms where the sound is damped by draperies and furniture. It's a good idea, but what if you redecorate after installing the speaker? The control would be easier to reset if it was on the front panel.

The Niles speaker exhibited the typical in-wall characteristic of mildly overemphasizing higher frequencies, which caused certain piano notes to sound too loud and added sibilance to Jay Leonhart's voice on "Salamander Pie" (*Salamander Pie*, DMP). In terms of spatiality, instruments tended to cluster in the center of the soundstage on small-ensemble recordings. With choral recordings, both the voices and the ambient sound clung tightly to the speakers during loud passages. In the bass department, the HD650 was a typical in-wall.

On the other hand, the Niles excelled at producing a radiation pattern so uniform that the speaker sounded the same no matter where in the room I was standing. In fact, on small-ensemble recordings with widely spaced instruments, like the Oscar Peterson Trio's *We Get Requests* and Jennifer Warnes's *Famous Blue Raincoat*, the speaker dispersed the sound so well that I could hear the left channel while standing 30° outside the *right* speaker.

Paradigm AMS-300

A cast-aluminum front panel and mounting bracket give the Paradigm AMS-300 a hefty, high-quality feel, and — keeping the inherent limitations of in-wall speakers in mind — it had sonics to match. There was a depression in the midrange response, which tended to give a bit too much emphasis to percussion. This trough also emphasized the sound of the keys striking the strings on the "88-Note Piano Scale" (*Studio Reference Disc*, Prosonus) and made



the trumpets on Harry James's "More Splutie Please" sound mildly raspy. But the AMS-300 did about as good a job with ambience at moderate volume as you could expect from any in-wall in this price class and also performed well overall at low to average volume levels. ➤

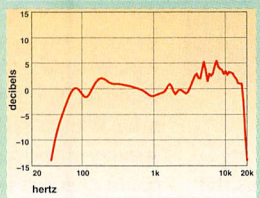
IN THE LAB

	AES 225S	AudioSource IW-Two	Boston Acoustics 381	Monster Sound IS8000	MTX Blueprint 620WE
FREQUENCY RESPONSE (±30° off-axis at 2 meters in a large room)	69 Hz to 13.8 kHz ±3.7 dB	58 Hz to 17.8 kHz ±4.3 dB	55 Hz to 15.1 kHz ±2.6 dB	53 Hz to 17.1 kHz ±6.5 dB	90 Hz to 16.8 kHz ±4.6 dB
SENSITIVITY (SPL at 1 meter with 2.83 volts of pink-noise input)	89.6 dB	91 dB	90 dB	90 dB	90 dB
IMPEDANCE (minimum/nominal)	5.4/7 ohms	11.6/16 ohms	6.6/9 ohms	4.2/7 ohms	3.9/7 ohms
BASS LIMITS (lowest frequency, max. SPL with <10% distortion at 2 meters)	90 dB at 50 Hz	82 dB at 50 Hz	88 dB at 50 Hz	89 dB at 50 Hz	63 dB at 40 Hz

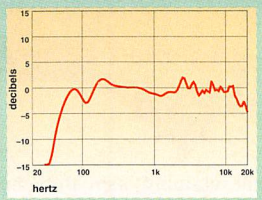
AES



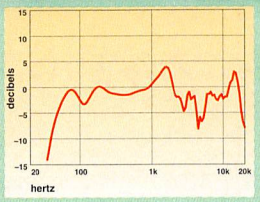
AudioSource



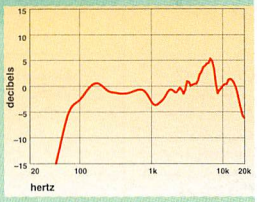
Boston Acoustics



Monster Sound



MTX

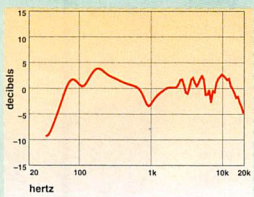


	NHT SuperOne Ci	Niles Audio HD650	Paradigm AMS-300	RBH Sound TK6	Sonance 622
FREQUENCY RESPONSE (±30° off-axis at 2 meters in a large room)	48 Hz to 18.9 kHz ±3.1 dB	55 Hz to 17.2 kHz ±3.7 dB	48 Hz to 20 kHz ±4.0 dB	62 Hz to 20 kHz ±5.2 dB	62 Hz to 17.6 kHz ±3.7 dB
SENSITIVITY (SPL at 1 meter with 2.8 volts of pink-noise input)	90 dB	91 dB	91 dB	88 dB	91 dB
IMPEDANCE (minimum/nominal)	7.2/12 ohms	5.5/12 ohms	5.8/10 ohms	8.9/14 ohms	6.6/9 ohms
BASS LIMITS (lowest frequency, max. SPL with <10% distortion at 2 meters)	88 dB at 50 Hz	81 dB at 50 Hz	80 dB at 40 Hz	86 dB at 50 Hz	80 dB at 50 Hz

NHT



Niles Audio



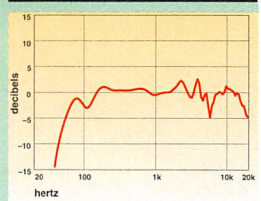
Paradigm



RBH Sound



Sonance



All measurements and listening were done with the speakers installed as a stereo pair in a large, bare listening-room wall 18 feet wide and 18 feet high with a vaulted ceiling. The speakers were placed 7½ feet apart, with each speaker at least 3 feet in from the side wall and the center of the front panels 62 inches from the floor. I performed my standard suite of measurements on the right speaker, which was more than 7 feet from the side wall, with a microphone 2 meters away. After measuring each pair of speakers, I played my standard stereo CD test tracks, listening from about 14 feet away. All of the speakers were driven by the same 150-watt-per-channel stereo amplifier.

Thanks to their flush panels, all of the speakers delivered extremely uniform radiation out to 60°, with only a small loss of high frequencies off-axis. In fact, the unweighted average output at ±60° looked exactly like the ±30° average except for approximately 2 dB less output above 1 kHz.

The AES 225S displayed the typical low-frequency wall interaction (note the dips around 100 Hz in the response graphs) but followed that by virtually flat response up to 4 kHz, with a wide trough between 5 and 12 kHz. The AudioSource IW-Two's response was smooth but rose 3 to 5 dB above 3 kHz.

While the Boston Acoustics 381 produced a typical in-wall response curve at low frequencies, from 300 Hz upward its frequency response was truly high-fidelity. The basic response shape for the Monster Sound IS8000 was quite irregular in the midrange compared with most of the others in this group, with a hump centered at 1.5 kHz and a wide, deep trough between 2 and 10 kHz. There was a sharp notch at 4 kHz (near the crossover frequency) directly on-axis, but our averaging techniques smooth it out a bit in the curve.

The resonant frequency of the MTX Blueprint Series 620WE was 89 Hz, which means its response would fall off at 12 dB per octave below that frequency even if wall radiation wasn't a factor. Its plastic enclosure helped to make wall effects less dramatic than with the other speakers, and the MTX produced 40 Hz with low distortion, but only at a quiet 63 dB SPL. At 50 Hz, the SPL was 74 dB, or some 10 to 12 dB less than the competition. It also had a broad rolloff and less wall interaction below 200 Hz. Aiming the tweeter toward the listening position only emphasized the speaker's 5- to 6-dB peak at 6.8 kHz, so you're better off pointing it away. Pointing it as far off-axis as possible reduced its output by 2 to 6 dB above 4 kHz.

The NHT SuperOne Ci displayed a very gentle downward slope as the frequency increased, but otherwise it had the flattest response of any speaker here. The response curve for the Niles HD650 shows a depression at 800 Hz and some roughness between 2.5 and 7 kHz. Turning the Presence control on added a little less than 1.5 dB between 1.2 and 7 kHz.

The Paradigm AMS-300 displayed a wide, shallow response trough between 300 Hz and 4 kHz, followed by a high-frequency dip centered at 13.5 kHz. Its bass output was the best of the batch, going down to 40 Hz with low distortion. The low-distortion SPL of 88 dB at 50 Hz is comparable to the better performers here.

The RBH TK6 had impressively flat response up to 3 kHz, after which things got wild and woolly. The averaged curve shown here tends to play down the high-frequency irregularities I measured between 4 and 7 kHz. The small cavity used for the pivoting tweeter probably accounts for much of this. Response irregularities shifted in frequency somewhat as the tweeter was swiveled, but the overall shape remained fairly constant. The Sonance 622 had a relatively flat response except for some dips and peaks in the +5- to –6-dB range from 2 to 7 kHz. — *T.N.*



RBH Sound TK6

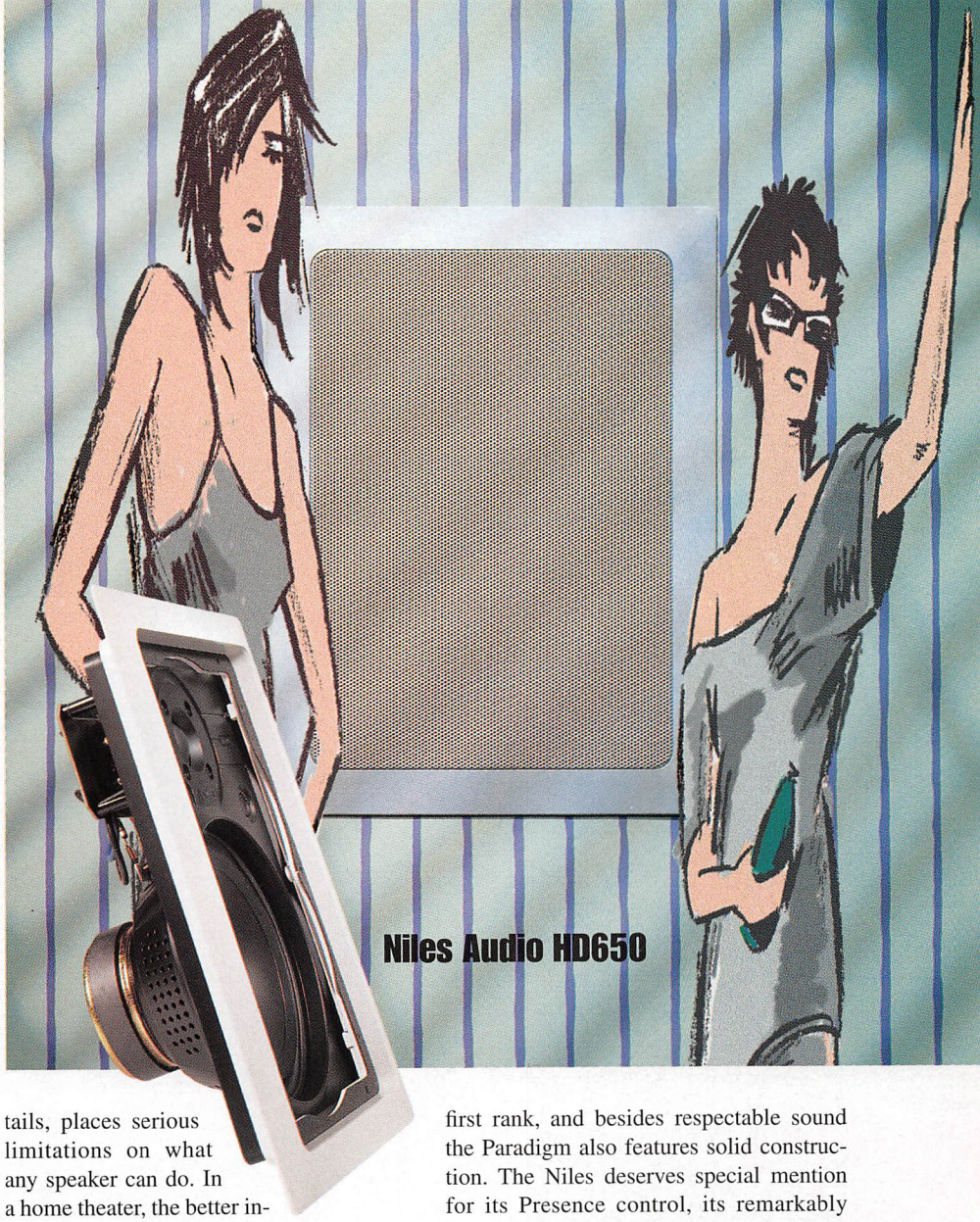
I was surprised by how much trouble the RBH Sound TK6 had reproducing music even at typical listening levels. Most vocals sounded hollow, as if the performer was singing through cupped hands. Piano notes were uneven and peaky. Keeping the volume low helped minimize these sonic woes and reduced wall chatter, but the basic tonal colorations remained. The speaker's woofer even bottomed out with a loud "Pock!" at high levels — the only one here to do so — which means you need to keep a serious eye on the volume control.

Sonance 622

The Sonance 622 measured flat, but subjectively it sounded like a typical in-wall. In other words, vocals tended to sound a little hollow, and the sonic image hung between the speakers. Distortion and spatial irregularities became increasingly evident as I turned up the volume. For instance, on Joe Williams's "Dimples" (*I Just Want to Sing*, Delos), intermodulation distortion caused the strong bass line to warp the pitch of brass instruments. These speakers were more sensitive to listener position than the others here. Small head movements would sometimes cause the images to wander and become unfocused. At low and moderate levels, though, the 622 sounded fine — just like the other middle-of-the-road performers in this group.

Scaling the In-Walls

Even the best of the ten in-wall speakers reviewed here couldn't perform as well as a respectable free-standing speaker, but it would have been unrealistic for me to expect them to. Being mounted in a wall, with all of the interaction problems that entails, places serious limitations on what any speaker can do. In a home theater, the better in-walls in this group might be suitable for surround-channel use, but only if you add a subwoofer and watch movies with sound levels well below those at an actual theater. As for the front channels — don't even think about using one of these models unless you prefer low-key dramas with lots of dialogue.

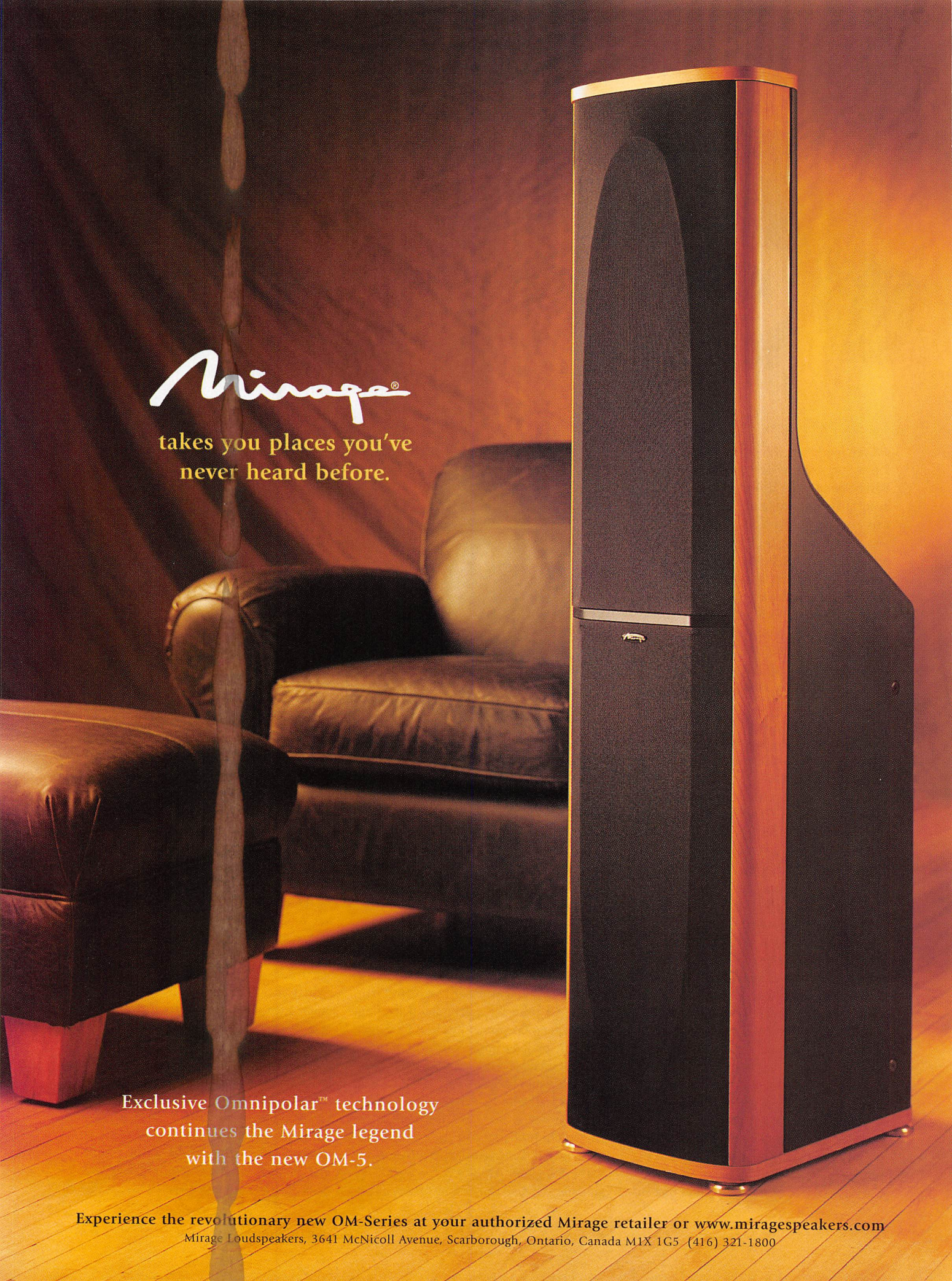


That said, many of the speakers reviewed here will do a great job of providing background music for any room in the house — or all of them at once! The AES-225S, Boston Acoustics 381, and NHT SuperOne Ci were the standouts, delivering realistic reproduction of music at moderate volumes, playing fairly loud without distortion, and displaying minimal interaction with the wall. The Boston Acoustics also gets top marks for its construction and appearance, while the NHT deserves to be singled out for being $50 cheaper than the AES and $100 cheaper than the Boston.

The Paradigm AMS-300, Sonance 622, and Niles HD650 came in just short of the first rank, and besides respectable sound the Paradigm also features solid construction. The Niles deserves special mention for its Presence control, its remarkably uniform radiation pattern, and, especially, its owner's manual, which includes diagrams that show you how to string the wires along with other installation tips. Every speaker should come with a manual this comprehensive.

The RBH Sound TK6, with its hollow sound and subpar woofer performance, the MTX 620WE and AudioSource IW-Two, with their overly bright highs, and the Monster Sound IS8000, with its heavily colored sound and wall-interaction troubles, all fell short sonically. The Monster gets an honorable mention, however, for its front-panel high-frequency control.

While it's easy to dwell on why in-walls don't sound as good as free-standing speakers, it's also important to emphasize what they do well. More than anything else, they give you the ability to have music in every room of your house without cluttering up precious floor space. For a lot of people, that alone is good enough reason to welcome in-walls into their homes. S&V


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THE SETUP

BY FRANK DORIS



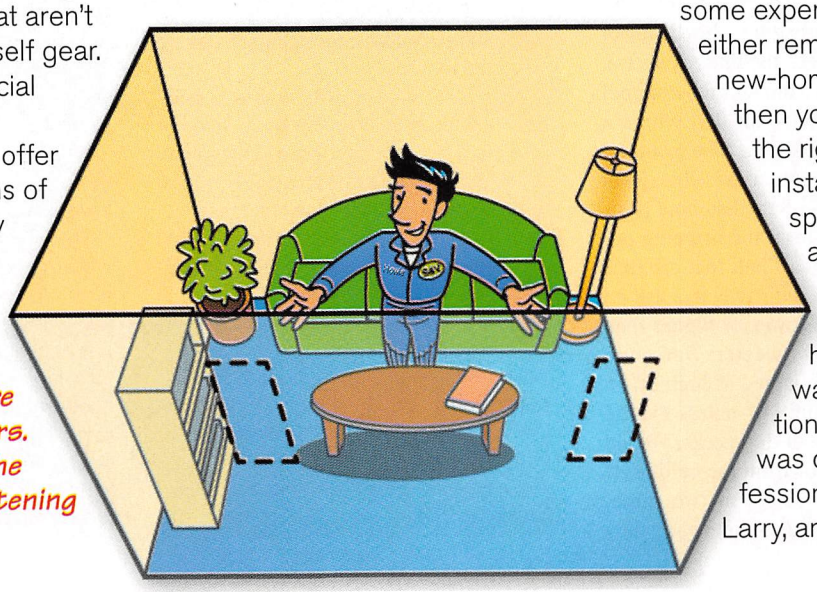
How to install your in-wall speakers

Usually I start these articles off in a folksy, friendly tone, but this time I've got to challenge you from Square One: think hard about whether you really want to do this job yourself. Unlike the usual A/V-component installations, in-wall speaker installation (also on-wall and in-ceiling — I'll call 'em all "in-wall" from now on for simplicity) requires serious construction skills and can involve cutting into walls, wall studs, ceilings, floors, joists, and other building elements as well as running wires through and around walls, floors, ceilings, other structures, and existing wiring or plumbing. Also, you'll need some tools for the job that aren't your standard do-it-yourself gear. And you might need special training as well.

True, in-wall speakers offer the undeniable attractions of blending inconspicuously with the home environment and saving valuable floor space. They also sound a lot better than they used to. Once ridiculed by audiophiles, today's in-walls can offer very satisfying sound quality at modest volumes. (For a review of ten of the latest midprice models, see "The In Crowd," page 86.)

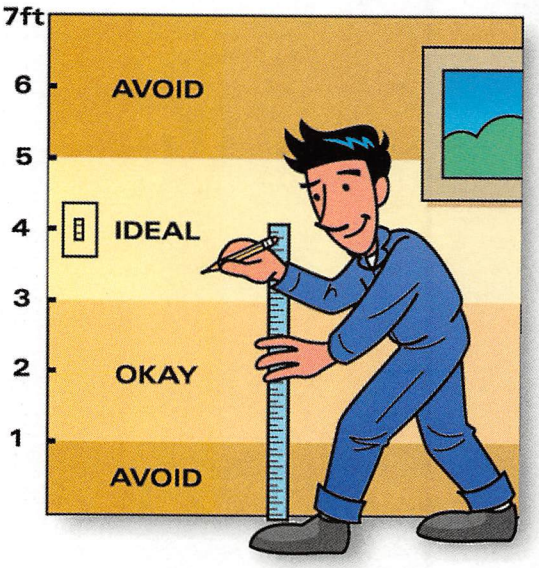
But carefully consider why you're thinking about installing them yourself. If it's to save the money you'd pay a professional installer, what's your time worth, and will the hours spent doing the job be worth the cost savings? (Hey, we're all busy. I don't know about you, but these days I'd literally pay for more leisure time if I could.)

On the other hand, if you love to do this kind of work, enjoy the satisfaction that comes from a job well done, are handy with tools, and already have some experience with either remodeling or new-home construction, then you likely have the right stuff to install in-wall speakers. But assess your capabilities with brutal honesty — you want the installation to look like it was done by a professional — not Curly, Larry, and Moe.



Step 1: *Determine where you'll want the speakers. For stereo listening, the wall that faces the listening position is best.*

ILLUSTRATIONS BY MICHAEL BRENNAN



***Step 2:** In-wall speakers are best placed 3 to 5 feet from the floor, although 1 to 3 feet is okay if want to keep them out of view.*

Make a New Plan, Stan

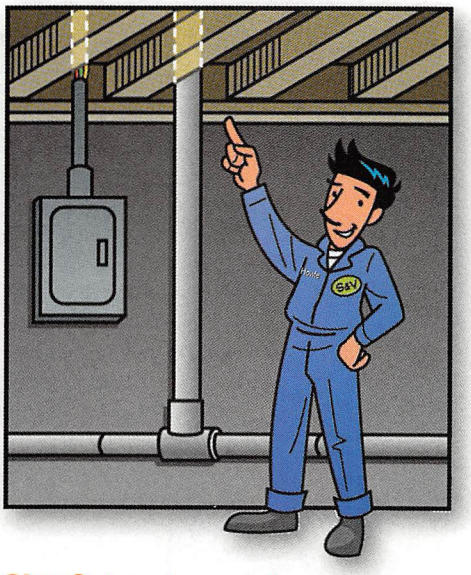
Before undertaking the job, make a plan and get prepared! First, consider how you use the room or rooms the speakers will be installed in — particularly where you and other listeners sit — and plan the location of the speakers accordingly. Make sure the speakers will be in front of you — or, in the case of home theater surrounds, on the side or rear walls of the room. Do you want the speakers to be completely hidden, painted to blend into the wall, or is it okay if they're easily visible? Of course, if you're going to do what most people do and use the speakers primarily for background music, placement isn't as critical. But you'll still want to stay close to the guidelines here for the best sound.

For stereo listening, the speakers should be about 6 to 10 feet apart to get some stereo separation and imaging (they'll never image as well as free-standing speakers). In a home theater, the center-channel speaker should be above the TV, within a foot of the screen if possible. The front left and right speakers should, if possible, form an isoceles triangle with the listening position, equally distant from the listening position and spaced at least half that distance apart; place them so their tweeters are no more than 24 inches lower or higher than the center speaker's tweeter. Surround speakers should be mounted as high up on the rear wall as possible — unless they're dipoles — but the top of the speaker should not be less than a foot from the ceiling. If they're dipoles and radiate in two directions from angled baffles (meaning they stick out from the wall a few inches), a side placement is better. Unfortunately, with in-walls you have little flexibility to experiment with speaker placement.

Different mounting locations will have different effects on the speakers' tonal balance. The ideal location for most accurate sound from front speakers is between 3 and 5 feet off the floor. Locating in-walls between 1 and 3 feet off the floor can be acceptable — and works better if you want to hide them away — but it will emphasize the midrange. You should avoid placing front in-walls lower than a foot and higher than 5 feet above the floor — that will yield an overly dark tonal quality. But surrounds should be about 2 to 3 feet above your seated listening position. With speakers mounted in the ceiling — which will always have a "background music" quality — a good location is between one-sixth and one-third of the way from the end of either long wall, placed down the center of the ceiling. Also, placing speakers closer than 2 feet to a corner or a wall/ceiling juncture will reinforce bass — possibly excessively. (That's why subwoofers usually work better in a corner.) And take care that the speakers aren't blocked by furniture, lamps, opened doors, and so on.

Sizing Up the Room

It's much easier to install in-wall speakers during new construction or remodeling, because you can run the speaker wires through the walls before the drywall (sheetrock) goes up and covers it, and you can mount the speakers directly to "rough-in" wall frames. New construction also gives you the option of installing PVC pipe inside the wall and through the basement or attic that you can use as a conduit for new wires if you decide to expand your system later. (You can also use this pipe to run home-network cables.) Just make sure to note the locations of all wiring breakouts and where you want to put the speakers before the sheetrockers cover everything up!



***Step 3:** Locate any pipes or wires that go up into the wall where you plan to install the speakers.*

Getting It Done Professionally

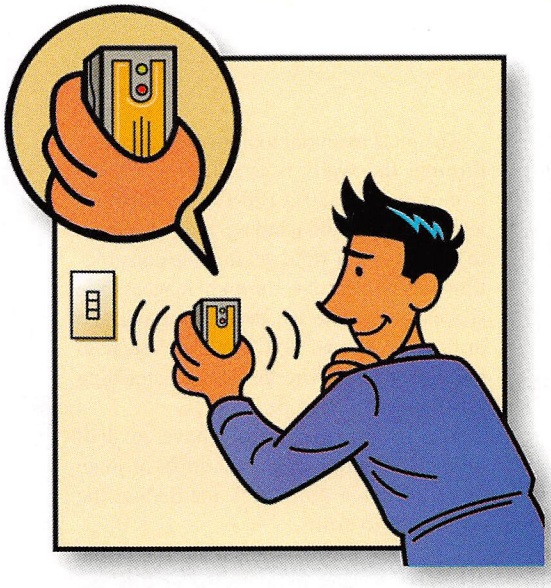
If you decide the do-it-yourself route isn't for you, don't despair. There are hundreds of installation professionals throughout the country who can install not just in-wall speakers but the custom whole-house home entertainment system of your dreams.

Your local specialty-audio retailer probably has a custom-installation service, and many firms do that exclusively, often working hand in hand with architects and interior designers. You can find these in your phone directory under "Audio/Video Consultants" and "Stereophonic and High Fidelity Equipment — Dealers."

A professional installation specialist will be licensed and insured, and perhaps have certification from trade organizations such as CEDIA (Custom Electronic Design & Installation Association) and PARA (Professional Audio/Video Retailers Association) or companies like Lucasfilm THX.

CEDIA is an international trade association of specialists in planning and installing all types of home-electronics systems. For information, write to CEDIA, 9202 N. Meridian St., Suite 200, Indianapolis, IN 46260, or call 800-233-4230. The Web site, www.cedia.org, features a dealer locator to help you find a qualified installation professional in your area. You can contact PARA at 10 E. 22nd St., Suite 310, Lombard, IL 60148, 630-268-1500; www.paralink.org.

Recommendations by friends and industry professionals are also invaluable. Many dealers will have a portfolio of previous installations for your examination and might be able show you actual installations. Before entering into any contract, make sure the scope of the job, including all costs, is clearly explained in writing and that you understand exactly what the job entails and what you're paying for. *— F.D.*



***Step 4:** Use a stud finder to locate vertical and horizontal wall studs.*

If, like most people, you're going to be installing the speakers in an existing home, there's even more to consider. After roughing out speaker placement, determine how you're going to run wires from the speakers to your receiver. You'll need to study the actual construction of the walls to figure out the best route.

Most walls in modern houses are constructed using 2 x 4 wood (or metal) studs running vertically from the floor to the ceiling, affixed to 2 x 4 or larger horizontal joists (also called wall and floor plates) to form the wall frames. These frames are usually covered by ⅝-inch-thick sheetrock for interior walls. Exterior walls, which are filled with insulation, faced by brick or other building materials, and reinforced by horizontal studs (which can also be found in interior walls, especially in older houses), are much more difficult to work with. In addition, many walls contain your home's heating or plumbing conduits, electrical and other wiring, and maybe even leftover building debris.

The speaker wires will have to be routed through the walls and otherwise kept out of sight by running them behind furniture or window treatments, through heating baseboards, under carpet, and under moldings or door jambs (you'll have to remove and replace these after routing the wire). It's important to avoid running speaker wires near existing plumbing and electrical wiring. Wiring can cause interference with the audio signal, and you're not going to want to have to contend with wires when you're trying to fix the plumbing.

In the easiest case — a one-story ranch house — the wires can be routed from the speakers through the wall and the floor or ceiling into the basement or attic, then to your receiver. If you're really lucky, you might be able to route the wires to your electronics through small holes drilled in the wall close to the floor where they won't be seen. Multistory houses are much more difficult to work with. For instance, you might have to route the speaker wires through the flooring between the stories — which is nobody's idea of a good time.

Examine the walls, ceiling, basement, and attic to determine where you might be able to run the wires. Then use a stud finder — available for a few bucks from any hardware store or home center — to locate the wall studs. Vertical studs are usually spaced 16 inches apart; horizontal studs (if any) will have to be located individually.

Then go into the basement to note where electrical lines, other wiring, and pipes go up into the walls. You can also examine the interiors of the walls by turning off the circuit breakers for all electrical service in the area, removing switch plates, light fixtures, and so on, and shining a light into the cavities. If the walls or ceiling can't be cut without ruining the finish, as in the case of fine wood paneling, or if you have any second thoughts about cutting and patching sheetrock, leave the installation to a professional. He'll have specialized tools like a fiber-optic camera and extra-long drilling equipment to work inside walls.



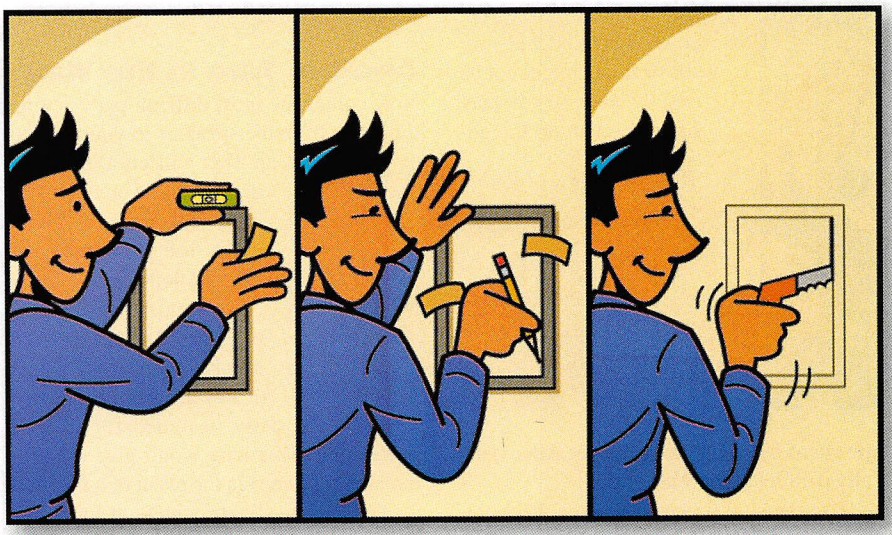
Helpful Hint

Use blue painter's tape to affix speaker templates to the wall. Unlike regular masking tape, it won't pull paint off the walls.

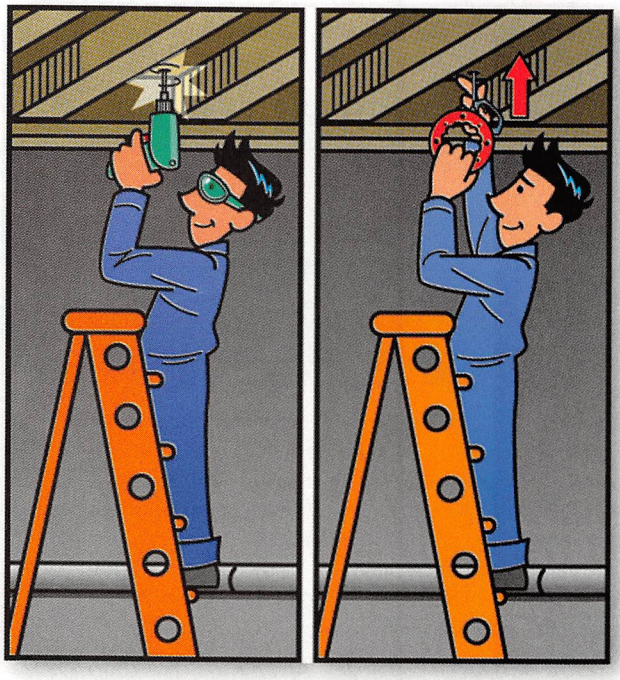
You might have to rethink your planned speaker locations if they prove to be impractical. Also, you might want to hire a professional just to evaluate your space and provide installation recommendations.

A few cautions:

- Always wear appropriate safety equipment, such as safety goggles and work gloves, and proper clothing — especially when you're drilling.
- Whenever possible, turn off all circuit breakers in the work location.
- For an extra safety measure, use a cordless drill. If you do accidentally hit a live electrical connection, at least you won't be grounded through the drill — and possibly shocked.
- If you hit any obstacles while drilling or cutting, stop immediately until you figure out what you've hit.
- Maybe you've heard the carpenter's axiom, "Measure twice — cut once?" Make that, measure *three or four* times before cutting!
- Be prepared to get dirty and maybe squeeze into spaces barely fit for a human. One installer told me he's inhaled more



***Step 5:** Use a bullet level to make sure the cutout template is even before taping it to the wall. **Step 6:** Trace the hole for the speaker using the template. **Step 7:** Use a keyhole or sheetrock saw to cut through the drywall.*



Step 8: *Drill a ½-inch hole through the floor plate under the wall where you'll be running the speaker wire.*
Step 9: *Feed fish tape up through the hole and into the wall to the speaker cutout.*

than his share of "mouth dung" over the years. Blech!

The Hole Truth

After you've found the best speaker locations and measured and visually rechecked everything to ensure proper orientation, affix the speaker templates. These are flat cardboard or paper guides that come with the speakers to indicate the size and shape of the holes to be cut. Tape them to the walls using blue painter's tape (unlike regular masking tape, this won't pull paint off the walls when you remove it).

Leveling is extremely important. The eye is drawn to any deviation from right angles and parallel lines. You don't want to step back, after doing all that work, and find you've mounted a speaker cockeyed. However, keep in mind that your walls or floors might not be exactly level, so you may have to touch up the adjustment by eye to keep the speakers visually parallel to the wall or floor.



Helpful Hint

Maybe the most helpful hint of all: if you're uncomfortable with any aspect of installing in-wall speakers, hire a pro.

Use the stud finder to double-check the location of the nearest studs after you affix the template. Then drill a small hole or cut a small slit in the center of the template. Probe the hole (you can use a coat hanger, but a nonconductive wood or plastic rod is better), rotating the probe to make sure there are no obstructions. (If you come across a horizontal stud, think twice before cutting into it — it might be load-bearing, in which case you should definitely find another speaker location!) Next, carefully cut the mounting hole using a keyhole or sheetrock saw. Make the cut as clean as possible in case you have to replace the scrap of sheetrock and patch the hole. Next, consult the speaker's owner's manual and drill the series of holes you'll need to drive the screws for the speaker mount, if required.

If it looks like it's going to be too much of a headache to install in-wall speakers, you might want to consider using shallow *on*-wall speakers instead. These hang on the wall like a picture and eliminate the need to cut speaker mounting holes — all you need is small holes to route the speaker wires. By the way, every installer I spoke with had this advice for cutting into plaster-and-lath walls: *Don't.* Hire a professional instead.

Another Wire in the Wall

Now comes the most difficult part: getting the wires from the speakers to your receiver. This will go a lot easier if you enlist a friend to help tap on walls, shine lights, use glow rods, call out locations, and so on.

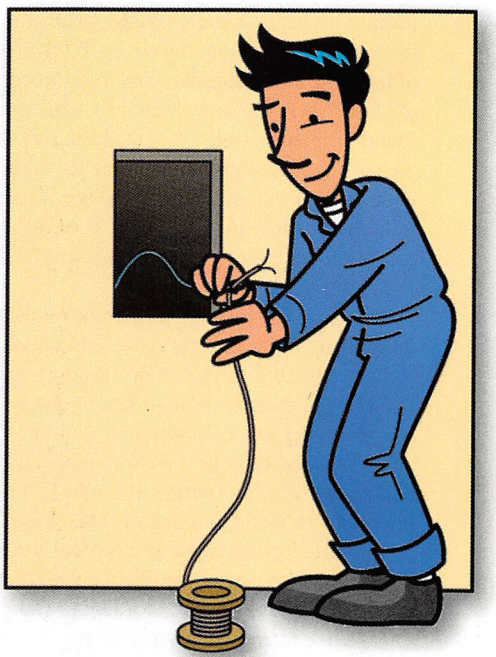
You must use Class 2 or Class 3 UL-approved speaker wire of 16 gauge or lower, which is specifically designed for in-wall installation. This wire won't give off life-threatening fumes in the event of a fire, and it's designed to slip through tight spots easily. Some brands even have convenient length markings printed on the insulation. There will also be some way to distinguish the two wires paired in each cable — one side might carry printing or ridging.

The most essential tool for routing wires through the walls is a fish tape, which comes in 25-, 50-, 100-foot, and other lengths. (The self-winding type is easiest to use.) Its semi-rigid yet flexible construction lets you probe through inaccessible spaces and locate the desired routing and drilling locations. You can also use it to pull the speaker wire through by attaching it to the end of the tape.

You'll almost certainly have to drill through a floor or wall plate (joist) at some point. Here's a pro's trick for finding the right place to drill:

First, buy a box of insulation hangers. Then, cut a sharp point on the end of one with a pair of diagonal wire cutters and use it as a drill bit. For a floor plate, drill at a 45-degree angle right where the wall meets the floor until the insulation hanger breaks through. Remove the drill from the hanger and leave the hanger in place. Then, go into the basement and notice where the hanger exits the floor. Using the hanger's entry angle to indicate what direction to measure in, make a mark about an inch beyond the entry point, then drill straight up. The idea is to drill the hole in the middle of the floor plate.

Use the same procedure to determine the right location in a wall/ceiling juncture: drill a hanger up into the attic and find the place for the hole from there. You can easi-



Step 10: *Attach the speaker wire to the fish tape and pull the tape back through the basement hole to run the wire.*

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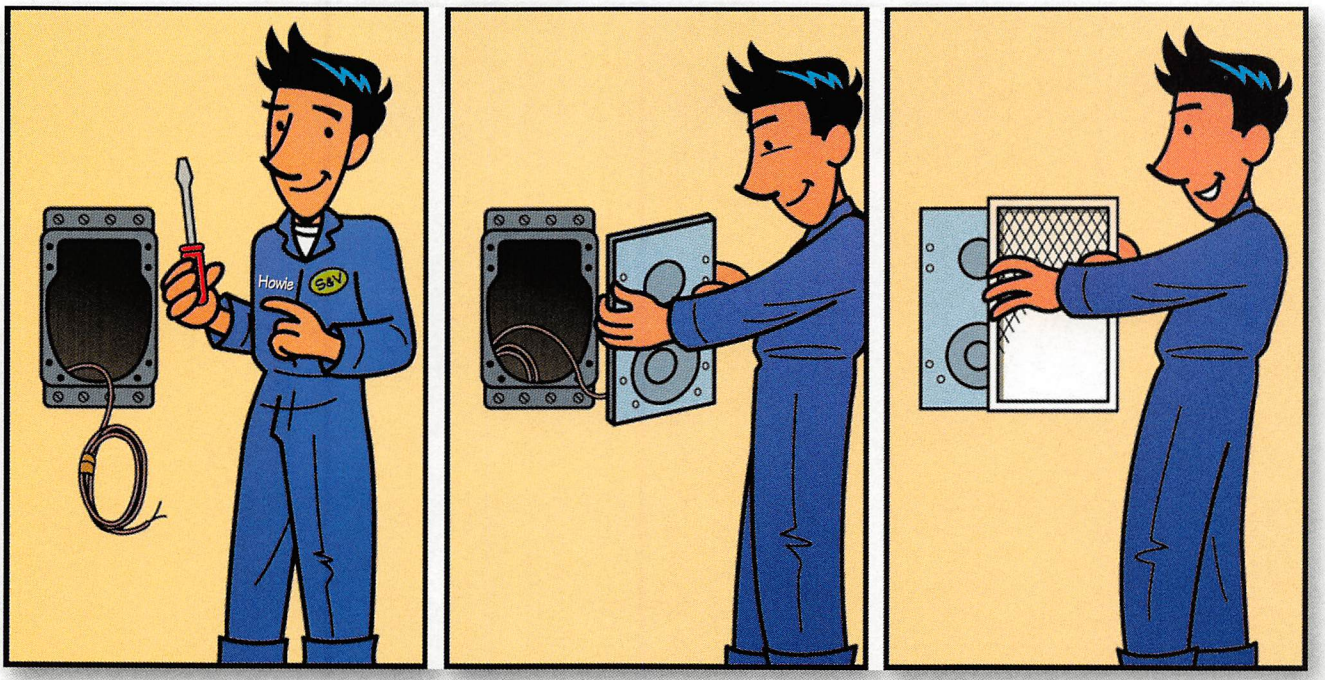
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***Step 11:** Tighten the mounting-frame screws. (Leaving a 2-foot "service loop" of wire will make it easier to remove or service the speaker later on.) **Step 12:** Fasten the wire to the speaker and place it in the frame. **Step 13:** Snap the speaker grille into place.*

ly fill the tiny holes left by the hangers by using spackle, putty, or the kind of fill stick designed for furniture repairs.

"Flex" drill bits make it easier to drill into corners. (Some are up to 42 inches long, with 42-inch extensions for getting into really long areas.) But be careful with these! One installer noted that they can become a "weapon" in the wrong hands.

If you can't find a clear path to run the wires from the speakers through the walls to your receiver, you might need to cut 4 x 4-inch "access" openings along the wiring route (including cutting into wall/ceiling boundaries) to get to the wires, make room to drill holes, and cut notches into studs and floor/ceiling joists. (I said this could get tough!) Of course, you'll have to patch and repaint the holes after you're done.

As you're pulling the wires through, staple them (using electricians' staples), tie-wrap them, or otherwise secure them to the studs, wall and floor plates, basement ceilings, and so on whenever you can. Be sure to leave at least an extra 2 feet of wire at each speaker end, bent in a "service loop." That way, if you ever have to remove a speaker for replacement or servicing, you'll have plenty of slack to work with.

At the receiver end, make sure to label the speaker wires for channel and phase (+ and –). Leave the labels on after installation in case you ever change your receiver (or amplifier). If you forget, you'll have to figure out which wire goes to which speaker by trial and error — after you're done kicking yourself.

Take That, Bob Vila!

Once you've cut the speaker mounting holes and run the wires, the next step is either to fill the space around each speaker with a foot or two of insulation — recommended for better sound — or to install a subenclosure, an internal box that acts as a speaker cabinet to improve bass response and reduce leak-through to the room behind (some manufacturers supply these or provide plans to build one).

Strip the ends of the speaker wires using wire strippers (knives do a poor job and are dangerous), and connect the wires to the speaker terminals. Observe correct polarity or bass response and imaging will suffer. The speaker terminals will be marked + and – or red and black; you'll need to decide which side of each cable corresponds to these (most are *not* labeled or color-coded but can be distinguished in other ways).

Most in-wall speaker frames mount directly into the sheetrock, using expansion bolts that "lock" the speaker in place when tightened. Some models provide a means for further bracing using the wall studs (or optional rough-in frames for new construction). Once you have the speaker resting in the mounting hole, use a bullet level to double check that it's straight before tightening the bolts or screws.

Next install the grilles, which is usually a snap, literally, since they often snap right onto the speaker frame. Most grilles can be painted to blend with the room décor. Just take care not to clog the grille holes, as this will block the sound! You might have to thin the paint for best results.

Connect the speaker wires to your receiver, again observing polarity matching, and you're done. Now you can put your tools away, wash up, and listen! S&V

Required Tools & Materials

- ✓ Stud finder
- ✓ Keyhole or sheetrock saw
- ✓ Cordless drill
- ✓ "Flex" drill bits
- ✓ Safety goggles and gloves
- ✓ Fish tape
- ✓ Screwdriver
- ✓ Tape measure
- ✓ Class 2 or 3 UL-approved speaker wire (16-gauge or less)
- ✓ Blue painter's tape
- ✓ Coat hanger or nonconductive stiff rod to use as a wall probe
- ✓ Flashlight
- ✓ Bullet level
- ✓ Insulation hangers
- ✓ Diagonal wire cutters
- ✓ Wire strippers
- ✓ Electrician's staples and stapling gun, or tie wraps
- ✓ Furniture-repair fill stick, putty, or spackle



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It's not the size of the dog in the fight. It's the size of the fight in the dog.



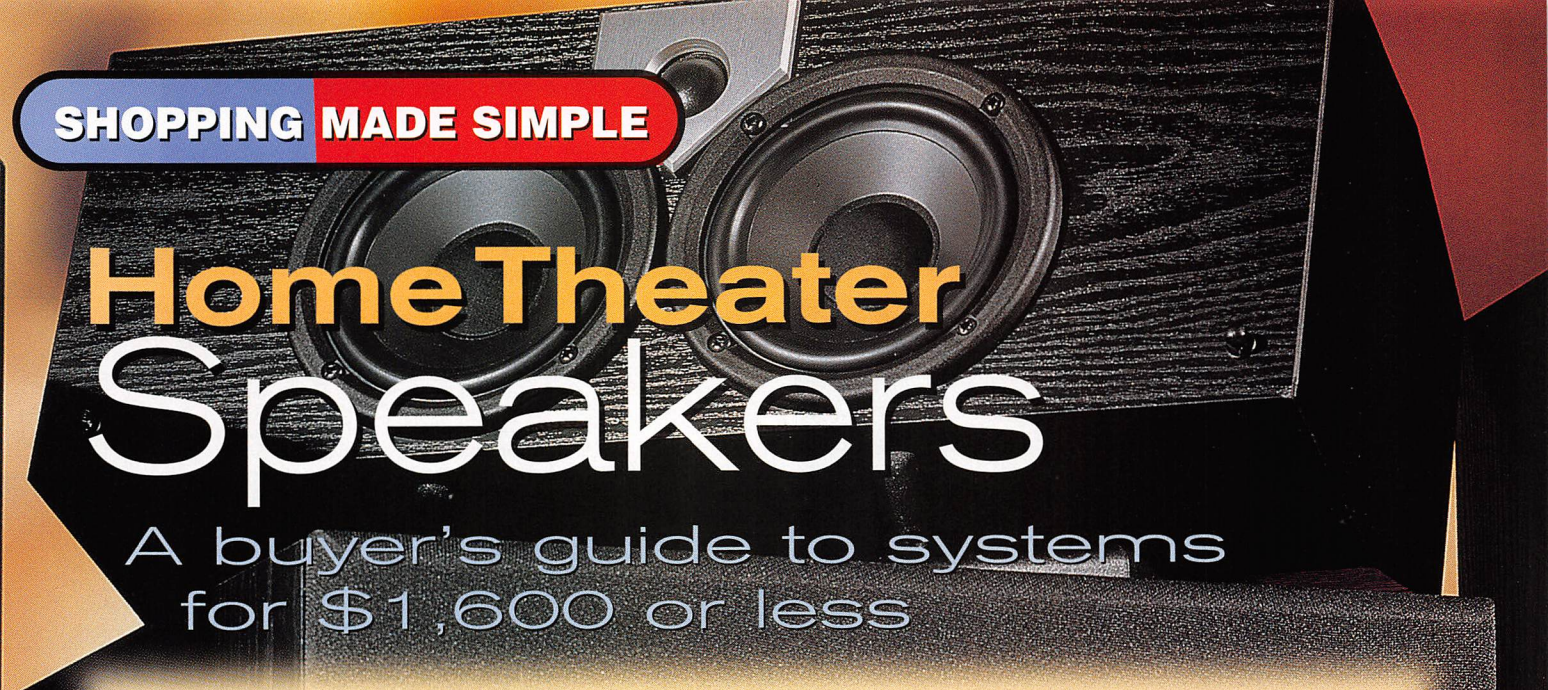
It used to be that if you wanted a lot of deep bass you had to have a big subwoofer. Not anymore. B&W's new ASW2500 measures little more than a cubic foot. That means you can place it anywhere you want without it looking like a Great Dane's Kennel. Fire this puppy up and it retrieves deep bass with bone-rattling impact matched only by the largest of "woofers". The ASW2500 growls powerful, accurate, bass through a combination of 1,000 watt amplifier and an ultra-long throw 10" bass driver. Now you can get visceral, deep bass that's house-trained to be heard and not seen. Best of all, this woofer's B&W pedigree makes it the top dog in any fight.



Available only at your authorized B&W Dealer.

B&W

LISTEN AND YOU'LL SEE



SHOPPING MADE SIMPLE

Home Theater Speakers

A buyer's guide to systems for $1,600 or less

Can you expect to find a six-piece home theater speaker system that truly delivers the goods for a grand and a half? After all, rich Hollywood studio types routinely spend twice that much just for the seating in their custom-designed home theaters — *per chair*. But with anything you buy, there comes a point where paying more and more brings smaller and smaller improvements. Happily, for a sextet comprising left, center, and right front speakers, left and right surrounds, and a subwoofer, $1,200 to $1,600 is just about where the law of diminishing returns kicks in. Sure most $3,000 speaker systems clearly sound better than $1,500 systems, but do they really sound *twice* as good?

And in this price class in particular the beneficial effects of competition also come to your aid. Because $1,400 to $1,600 seems to be the amount most people are willing to pay for serious home theater speakers, manufacturers pull out all the stops to get the attention of anyone shopping in that range. This tends to translate into rigorously designed systems that are also first-rate values.

So what do you give up when you pay $1,500 instead of, say, $2,500 for a speaker system? There's no hard-and-fast answer, of course, since there are so many $1,500 systems to choose from, but here are the likely tradeoffs:

- **Bass power.** The smaller driver and amplifier used in a less expensive system's subwoofer will usually do a respectable job of conveying the ominous rumbling that underpins most action-flick soundtracks. But they won't be able to deliver deep bass (below, say, 35 Hz) loud enough to rumble a room much bigger than about 3,000 cubic feet without audible distortion. Nor can they deliver the earth-moving ultra-deep bass necessary to get the T-Rex in *Jurassic Park* to loosen your carpet tacks.
- **Appearance.** The speakers in your average sub-$2k system are usually done up in a black or woodgrain vinyl "wrap" over medium-density fiberboard (MDF) enclosures. A typical $2,000-and-up system will have MDF enclosures with real wood-veneer finishes.
- **Dynamic potential and power-handling ability.** Higher-priced systems are more likely to handle very high power without self-destructing or revealing audible distortions. This *can* translate into greater dynamic range — but only if your receiver or amplifier can deliver well over 100 watts per channel.

Because navigating the excess of riches in this competitive field can be tough, here are a few tips to help you find your way.

At the store, listen to music in both stereo and surround formats. Sure it's a "home theater" system, but dollars to donuts says that at least half the time you'll use it to listen to CDs. How well the system reproduces voices, instruments, and the space and depth of the soundstage, and whether it creates natural and stable stereo images, could prove just as important in the long run as its cinematic slam and how it renders whiz-bang surround sound effects.

Think about placement. If you know you're going to have to put the front speakers on a bookshelf, make sure they're designed to perform well there. Similarly, if the speakers are engineered to sound best on stands placed a couple of feet out into the room, make sure your layout can accommodate this. Remember: placement and room acoustics influence the sound of a system *at least* as much as the quality of the speakers themselves.

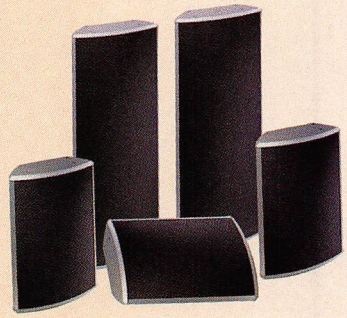
The center speaker delivers almost all of a movie's dialogue plus plenty of its music and effects, so you'll want to pay careful attention here. The center should closely match the left and right front speakers in both tonal character and "coverage." Voices should sound open and natural even when you're sitting well off to one side of the primary listening position, and sounds that pan from left to right across the screen, such as skidding cars or passing trains, should move smoothly along the front trio of speakers without "jumping" into the center speaker.

Make sure you can place the center speaker right in the middle of the front of your room. If you have a rear-projection TV with a narrow top surface, measure it so you'll know if the speaker you want will fit there. And place the front L/R speakers so their tweeters are at about the same height as the center's. Plan ahead for subwoofer placement, too. Most subs sound best when plunked down in, or near, a corner on the same wall as the front speakers — but there are plenty of exceptions. If you want the best from your system, prepare to experiment with subwoofer locations.

As for surrounds, many systems in this price range package four or five identical "satellite" speakers for the front and surround channels, while other systems have speakers designed specifically for each position. Surrounds can be direct-radiating, similar (or identical) to the front speakers, or dipole or bipole designs to create a more diffuse sound field. Di- or bipole speakers are usually better for movie soundtracks, while direct-radiating surrounds are preferred by some for listening to multichannel music.

Finally, take a long, hard look at your chosen system's design, finish, and craftsmanship. If, like most people, you'll be using the speakers in a living room or den, you're going to be looking at them, with the lights on, for far more hours than you'll be listening to them while watching movies in the dark. — *Daniel Kumin*

home theater speaker systems



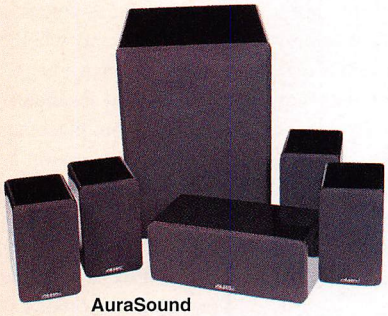
Acoustic Research Phantom system



Athena Technologies S2, C1, S1, and P3



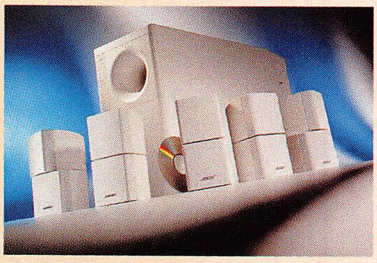
Atlantic Technology System 170



AuraSound Baby Grand



Boston Acoustics Lynnfield VR 940, VR 910, VRS Micro, and PV 600



Bose Acoustimass 15



Cambridge SoundWorks Tower II HomeTheater



Canton Movie 20X Silver

Listings compiled by Peter Pachal

MANUFACTURER	Model	Price*
Acoustic Research 2950 Lake Emma Rd. Lake Mary, FL 32746 800-732-6866 www.recoton.com ***Phantom system*** Total: $1,500	Phantom 6.2 (front L/R)	$750 a pair
	Phantom 5.2C (center)	$250 each
	Phantom 5.2 (surrounds)	$500 a pair
Athena Technologies 3841 McNicoll Ave. Scarborough, Ontario Canada M1X 1G5 416-321-1800 www.athenaspeakers.com Total: $1,500	S2 (front L/R)	$375 a pair
	C1 (center)	$250 each
	S1 (surrounds)	$275 a pair
	P3 (subwoofer)	$600 each
Atlantic Technology 343 Vanderbilt Ave. Norwood, MA 02062 781-762-6300 www.atlantictechnology.com ***System 170*** Total: $1,400	Model 171 LR (front L/R)	$300 a pair
	Model 173 C (center)	$200 each
	Model 174 SR (surrounds)	$300 a pair
	Model 172 PBM (subwoofer)	$600 each
AuraSound 2335 Alaska Ave. El Segundo, CA 90245 800-909-2872 www.aurasound.com ***Baby Grand*** Total: $1,200	front L/R, surrounds	not sold separately
	center	as above
	subwoofer	as above
Bose The Mountain Framingham, MA 01701 800-444-2673 www.bose.com ***Acoustimass 15*** Total: $1,400	front L/R, center, surrounds	not sold separately
	bass module	as above
Boston Acoustics 300 Jubilee Dr. Peabody, MA 01960 978-538-5000 www.bostonacoustics.com Total: $1,500	Lynnfield VR 940 (front L/R)	$500 a pair
	Lynnfield VR 910 (center)	$350 each
	VRS Micro (surround)	$200 a pair
	PV 600 (subwoofer)	$450 each
Cambridge SoundWorks 311 Needham St. Newton, MA 02464 800-367-4434 www.hifi.com ***Tower II HomeTheater*** Total: $1,500	Tower II (front L/R)	$900 a pair
	CenterStage (center)	$250 each
	Surround II 5.1 (surrounds)	$200 a pair
	BassCube 10 (subwoofer)	$280 each
Canton 1723 Adams St. NE Minneapolis, MN 55413 612-706-9250 www.cantonusa.com ***Movie 20X Silver*** Total: $1,175	Plus X (front L/R, surrounds)	$300 a pair
	Plus X-C (center)	$175 each
	AS 20 (subwoofer)	$400 each

Note: All information supplied by the manufacturers.
* Manufacturers' quoted prices; dealer prices vary.
** Manufacturer did not supply information. N/A = not applicable.

Tweeter	Woofer	Enclosure	Magnetic shielding	Subwoofer power	Frequency response	Sensitivity	Impedance	Dimensions (WxHxD, inches)	Weight (pounds)	Finish	Additional features/notes
1-inch titanium dome	6½-inch long-throw	sealed	✔	N/A	60 Hz to 20 kHz ±3 dB	89 dB	8 ohms	6½ x 22 x 3⅜	9½	silver anodized aluminum	No subwoofer; thin cabinets designed to complement flat-panel TVs.
1-inch titanium dome	5¼-inch long-throw	sealed	✔	N/A	80 Hz to 20 kHz ±3 dB	87 dB	8 ohms	11 x 9 x 3⅜	6	as above	
1-inch titanium dome	5¼-inch long-throw	sealed	✔	N/A	80 Hz to 20 kHz ±3 dB	87 dB	8 ohms	9 x 11 x 3⅜	6	as above	
1-inch dome	6½-inch	vented	✔	N/A	50 Hz to 20 kHz ±3 dB	93 dB	8 ohms	9½ x 14¼ x 12¾	18	cherry or black vinyl	
1-inch dome	5¼-inch	sealed	✔	N/A	60 Hz to 20 kHz ±3 dB	91 dB	8 ohms	21¾ x 8 x 5½	12½	as above	
1-inch dome	5¼-inch	vented	✔	N/A	60 Hz to 20 kHz ±3 dB	91 dB	8 ohms	8 x 12¼ x 9¾	11	as above	
N/A	8-inch	vented	✔	150 watts	20 Hz to 150 Hz ±3 dB	N/A	N/A	11¾ x 27 x 13½	34½	as above	
1-inch silk dome	dual 4-inch	sealed	✔	N/A	90 Hz to 20 kHz ±3 dB	87 dB	8 ohms	5½ x 13½ x 6½	7⅝	black ash	Ferrofluid-cooled tweeters on front L/R and center speakers.
1-inch silk dome	dual 4-inch	sealed	✔	N/A	90 Hz to 20 kHz ±3 dB	87 dB	8 ohms	13⅛ x 6⅛ x 6¾	8½	as above	
dual ¾-inch domes	dual 4-inch	sealed	—	N/A	90 Hz to 20 kHz ±3 dB	87 dB	8 ohms	9⅛ x 10¼ x 5¼	7⅛	black ash or matte white	
N/A	12-inch long-throw	sealed	—	150 watts	25 Hz to 180 Hz ±3 dB	N/A	N/A	13⅞ x 20½ x 13⅞	42¾	black ash	
silk rectangular line source	3½-inch polypropylene	sealed	✔	N/A	100 Hz to 20 kHz ±3 dB	89 dB	6 ohms	4¼ x 7½ x 4	3	high-gloss lacquer piano black	
silk rectangular line source	3½-inch polypropylene	sealed	✔	N/A	100 Hz to 20 kHz ±3 dB	89 dB	6 ohms	11¼ x 4 x 4¼	5	as above	
N/A	8-inch polypropylene	vented	✔	120 watts	32 Hz to 150 Hz ±6 dB	N/A	N/A	11 x 15¼ x 11¼	30	as above	
N/A	dual 2½-inch wide-range drivers	**	✔	N/A	**	**	4 to 8 ohms	3⅛ x 6¼ x 4	2½	black or arctic white	
N/A	dual 5¼-inch	**	—	**	**	N/A	N/A	23⅜ x 14 x 7½	33	as above	
1-inch aluminum dome	5-inch copolymer	vented	✔	N/A	51 Hz to 20 kHZ ±3 dB	89 dB	8 ohms	6 x 34 x 9	34	charcoal gray cloth, gloss black top	Ferrofluid-cooled tweeters on front L/R and center speakers. Amplitude Modulation Device smooths tweeter frequency response on Lynnfield VR 940 and VR 910.
1-inch aluminum dome	5-inch copolymer	vented	✔	N/A	65 Hz to 20 kHz ±3 dB	89 dB	8 ohms	20 x 6 x 6	15	charcoal gray cloth, matte black sides, black vinyl veneer	
2-inch copolymer	3-inch copolymer	sealed	—	N/A	120 Hz to 20 kHz ±3 dB	**	8 ohms	4 x 7 x 5	4	black or white	
N/A	10-inch copolymer	vented	—	100 watts	29 Hz to 150 Hz ±3 dB	N/A	N/A	12 x 16 x 16	30	black ash vinyl veneer	
1-inch soft dome	dual 8-inch polypropylene	vented	✔	N/A	**	**	8 ohms	9¼ x 35½ x 4	65	black ash or walnut vinyl	Ferrofluid-cooled tweeters on front L/R and center speakers. Tower II speaker is three-way design with 5¼-inch polypropylene midrange driver. Surrounds can be switched between bipole and dipole modes. Speakers sold separately and as complete system for package price of $1,500.
1-inch soft dome	5¼-inch polypropylene	vented	✔	N/A	**	**	8 ohms	25 x 7 x 8	20	black vinyl, knit grille	
2½-inch paper	3½-inch paper	sealed	—	N/A	**	**	8 ohms	4¾ x 6¾ x 4½	10	white or nextel	
N/A	10-inch paper long-throw	sealed	—	70 watts	**	N/A	N/A	13½ x 15 x 13½	35	black vinyl	
1-inch aluminum dome	4-inch polypropylene	sealed	—	N/A	45 Hz to 30 kHz ±3 dB	87 dB	4 to 8 ohms	5⅛ x 8 x 5⅛	6	silver	
1-inch aluminum dome	4-inch polypropylene	sealed	✔	N/A	45 Hz to 30 kHz ±3 dB	87 dB	4 to 8 ohms	8 x 5⅛ x 5⅛	6	as above	
N/A	8-inch	vented	✔	120 watts	33 Hz to 140 Hz ±5 dB	N/A	N/A	9½ x 14¼ x 17	29	black with silver trim	

home theater speaker systems



Celestion MP1, CSC, and S1



Cerwin-Vega RL system



Definitive Technology ProCinema 100



Energy Encore system



Infinity Interlude system



Jamo Omega 3 and SW 2010



JBL Northridge 38, Northridge-Center, Northridge 28, and PowerBass 12



KEF Cresta 3, Cresta C, and Cresta 2 (subwoofer not shown)

MANUFACTURER	Model	Price*
Celestion 10 Timber Lane Marlboro, NJ 07746 732-683-2356 www.celestion.com Total: $1,220	MP1 (front L/R, surrounds)	$300 a pair
	CSC (center)	$180 each
	S1 (subwoofer)	$440 each
Cerwin-Vega 555 E. Easy Street Simi Valley, CA 93065 805-584-9332 www.cerwinvega.com ***RL system*** Total: $1,550	RL-18P (front L/R, subwoofer)	$1,000 a pair
	RL-25C (center)	$250 each
	RL-16M (surrounds)	$300 a pair
Definitive Technology 11433 Cronridge Dr. Suite K Owings Mills, MD 21117 410-363-7148 www.definitivetech.com ***ProCinema 100*** Total: $1,350	ProMonitor 100 (front L/R, surrounds)	$350 a pair
	ProCenter 100 (center)	$200 each
	ProSub100TL (subwoofer)	$450 each
Energy 3641 McNicoll Ave. Scarborough, Ontario Canada M1X 1G5 416-321-1800 www.energy-speakers.com ***Encore system*** Total: $1,500	Encore 2 (front L/R, surrounds)	not sold separately
	Encore 1 (center)	as above
	Encore 8 (subwoofer)	as above
Infinity 250 Crossways Park Dr. Woodbury, NY 11797 800-553-3332 www.infinitysystems.com ***Interlude system*** Total: $1,530	Interlude 10 (front L/R)	$450 a pair
	Interlude 25c (center)	$230 each
	QPS-1W (surrounds)	$350 a pair
	Interlude 100s (subwoofer)	$500 each
Jamo 1177 Corporate Grove Dr. Buffalo Grove, IL 60089 847-465-0005 www.jamospeakers.com Total: $1,200	Omega 3 (front L/R, center, surrounds)	$190 each
	SW 2010 (subwoofer)	$800 each
JBL 250 Crossways Park Dr. Woodbury, NY 11797 800-336-4525 www.jbl.com Total: $1,580	Northridge 38 (front L/R)	$500 a pair
	Northridge-Center	$200 each
	Northridge 28 (surrounds)	$400 a pair
	PowerBass 12 (subwoofer)	$480 each
KEF 10 Timber Lane Marlboro, NJ 07746 732-683-2356 www.kef.com Total: $1,400	Cresta 3 (front L/R)	$500 a pair
	Cresta C (center)	$200 each
	Cresta 2 (surrounds)	$300 a pair
	25B (subwoofer)	$400 each

Note: All information supplied by the manufacturers.
* Manufacturers' quoted prices; dealer prices vary.
** Manufacturer did not supply information. N/A = not applicable.

Tweeter	Woofer	Enclosure	Magnetic shielding	Subwoofer power	Frequency response	Sensitivity	Impedance	Dimensions (WxHxD, inches)	Weight (pounds)	Finish	Additional features/notes
¾-inch dome	4½-inch	vented	✔	N/A	70 Hz to 20 kHz ±3 dB	90 dB	8 ohms	6 x 11⅝ x 8⅞	6½	dark gray or white	Subwoofer has speaker- and line-level connections and variable crossover. Center channel timbre-matched to rest of system.
¾-inch dome	dual 3½-inch	vented	✔	N/A	88 Hz to 20 kHz ±3 dB	89 dB	6 ohms	13 x 5¼ x 6	6¼	dark gray	
N/A	10-inch	vented	✔	75 watts	30 Hz to 150 Hz ±3 dB	N/A	N/A	14¾ x 18¼ x 17	22¼	black	
1-inch soft dome	8-inch paper	vented	✔	100 watts	35 Hz to 20 kHz ±2 dB	92 dB	6 ohms	10 x 43¼ x 12½	56	black woodgrain vinyl, charcoal grille	Ferrofluid-cooled tweeters on all speakers. RL-18P is three-way design with powered subwoofer and 6½-inch midrange driver. Surrounds timbre-matched to rest of system.
1-inch soft dome	dual 5¼-inch pulp	vented	✔	N/A	65 Hz to 20 kHz ±2 dB	92 dB	6 ohms	19½ x 7⅛ x 10½	16½	as above	
1-inch soft dome	6½-inch pulp	vented	✔	N/A	55 Hz to 20 kHz ±2 dB	92 dB	6 ohms	8½ x 14 x 11	13½	black woodgrain vinyl	
1-inch aluminum dome	5¼-inch cast basket	sealed	✔	N/A	50 Hz to 30 kHz ±3 dB	90 dB	4 to 8 ohms	6 x 10 x 5¾	11	black or white	
1-inch aluminum dome	dual 4½-inch cast basket	sealed	✔	N/A	50 Hz to 30 kHz ±3 dB	90 dB	4 to 8 ohms	14¾ x 5¼ x 5¾	13	as above	
N/A	10-inch long-throw	transmission line	—	250 watts	19 Hz to 150 Hz ±3 dB	N/A	N/A	11¼ x 14¼ x 17	33	as above	
1-inch aluminum dome	4-inch	sealed	✔	N/A	70 Hz to 22 kHz ±2 dB	89 dB	8 ohms	5⅛ x 7⅝ x 7⅝	6	high-gloss burnished ebony	Subwoofer has phase switch and variable crossover.
1-inch aluminum dome	dual 4-inch	vented	✔	N/A	70 Hz to 22 kHz ±2 dB	89 dB	8 ohms	15⅞ x 4⅞ x 7⅞	10	as above	
N/A	8-inch polypropylene	vented	✔	150 watts	25 Hz to 100 Hz ±3 dB	N/A	N/A	13½ x 14 x 14⅜	30	as above	
1-inch ceramic dome	6½-inch ceramic	vented	✔	N/A	56 Hz to 22 kHz ±3 dB	88 dB	8 ohms	15⅝ x 8½ x 11½	18	maple, cherry, or onyx	Drivers have ceramic coating on both sides of aluminum core to reduce mass and increase rigidity
1-inch ceramic dome	dual 5¼-inch ceramic	vented	✔	N/A	80 Hz to 22 kHz ±3 dB	90 dB	8 ohms	20½ x 7½ x 7½	20	as above	
N/A	four 3-inch full range	vented	✔	N/A	80 Hz to 20 kHz ±3 dB	88 dB	8 ohms	8½ x 11½ x 4½	16	white	
N/A	10-inch ceramic	vented	✔	250 watts	32 Hz to 150 Hz ±3dB	N/A	N/A	13¾ x 13½ x 17	35	maple, cherry, or onyx	
1-inch horn-loaded	4-inch	vented	✔	N/A	50 Hz to 20 kHz ±3 dB	90 dB	6 ohms	6⅜ x 9 x 5⅝	4½	15 colors, including white, ice blue, black, sand beige, and summer green	Speakers sold separately and as complete system for package price of $1,200.
N/A	10-inch	vented	✔	200 watts	33 Hz to 140 Hz ±3 dB	N/A	N/A	12⅝ x 15½ x 19⅜	37½	black	
¾-inch titanium dome	8-inch	vented	✔	N/A	45 Hz to 20 kHz ±3 dB	90 dB	8 ohms	12 x 31½ x 10½	35	black ash	Northridge 38 is a three-way design with 4-inch midrange driver. Subwoofer has gold-plated line-level and speaker-level inputs and outputs, phase switch, and variable crossover.
¾-inch titanium dome	dual 5-inch	vented	✔	N/A	80 Hz to 20 kHz ±3 dB	90 dB	8 ohms	20½ x 6½ x 8½	10	dark gray	
¾-inch titanium dome	8-inch	vented	✔	N/A	50 Hz to 20 kHz ±3 dB	90 dB	8 ohms	12 x 19½ x 9½	22½	black ash	
N/A	12-inch cellulose	vented	—	250 watts	25 Hz to 150 Hz ±** dB	N/A	N/A	15 x 17½ x 16	40	as above	
1-inch silk dome	5¼-inch polypropylene	vented	—	N/A	45 Hz to 20 kHz ±3 dB	90 dB	8 ohms	8 x 33½ x 9½	26½	cherry or black	Subwoofer has speaker- and line-level connections and variable crossover.
1-inch silk dome	dual 4-inch polypropylene	vented	✔	N/A	60 Hz to 20 kHz ±3 dB	90 dB	8 ohms	16¾ x 6¾ x 7½	11	as above	
1-inch silk dome	5¼-inch polypropylene	vented	—	N/A	48 Hz to 20 kHz ±3 dB	90 dB	8 ohms	8 x 14½ x 9½	13¼	as above	
N/A	10-inch	vented	✔	100 watts	38 Hz to 150 Hz ±2 dB	N/A	N/A	14 x 18 x 14	36½	black	

home theater speaker systems



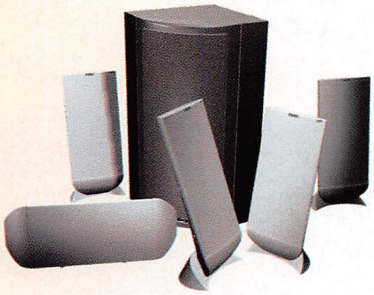
Klipsch SF-1, SC-1, SS-1, and KSW-10



M&K K5, K7, and K9



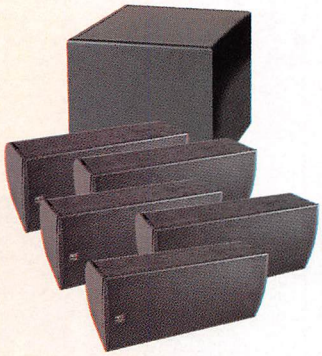
Mirage FRx-3, FRx-Center, FRx-Rear, and FRx-S10



Mission FS2-AV system



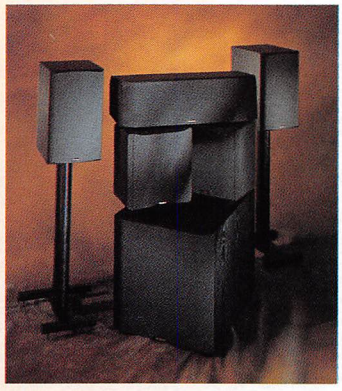
Monitor Audio Baby Micro system



MTX Model MP52 and SUB1



NHT SuperOne, SuperCenter, and SuperSub



Paradigm System 3

MANUFACTURER	Model	Price*
Klipsch 8900 Keystone Crossing Suite 1220 Indianapolis, IN 44240 800-554-7724 www.klipsch.com Total: $1,580	SF-1 (front L/R)	$500 a pair
	SC-1 (center)	$280 each
	SS-1 (surrounds)	$400 a pair
	KSW-10 (subwoofer)	$400 each
M&K Sound 10391 Jefferson Blvd. Culver City, CA 90232 310-204-2854 www.mksound.com Total: $1,400	K5 (front L/R, surrounds)	$300 a pair
	K7 (center)	$250 each
	K9 (subwoofer)	$550 each
Mirage 3641 McNicoll Ave. Scarborough, Ontario Canada M1X 1G5 416-321-1800 www.miragespeakers.com Total: $1,400	FRx-3 (front L/R)	$350 a pair
	FRx-Center	$250 each
	FRx-Rear (surrounds)	$350 a pair
	FRx-S10 (subwoofer)	$450 each
Mission 19 Chapin Rd. P.O. Box 867 Pine Brook, NJ 07058 973-396-0810 www.del.denon.com ***FS2-AV system*** Total: $1,500	FS2 nxt (front L/R, center, surrounds)	not sold separately
	FS2-S (subwoofer)	as above
Monitor Audio 902 McKay Rd. Pickering, Ontario Canada L1W 3X8 905-428-2800 www.monitoraudio.com ***Baby Micro system*** Total: $1,200	Baby Satellite (front L/R, surrounds)	$250 a pair
	Baby Center	$200 each
	ASW100 (subwoofer)	$500 each
MTX Audio 4545 E. Baseline Rd. Phoenix, AZ 85040 800-225-5689 www.mtxaudio.com Total: $1,050	Model MP52 (front L/R, center, surrounds)	$150 each
	SUB1 (subwoofer)	$300 each
NHT 2950 Lake Emma Rd. Lake Mary, FL 32746 800-732-6866 www.nhthifi.com Total: $1,475	SuperOne (front L/R, surrounds)	$350 a pair
	SuperCenter (center)	$275 each
	SuperSub (subwoofer)	$500 each
Paradigm M.P.O. Box 2410 Niagara Falls, NY 14302 905-632-0180 www.paradigm.ca ***System 3*** Total: $1,240	Titan (front L/R)	$220 a pair
	CC-170 (center)	$200 each
	ADP-170 (surrounds)	$400 a pair
	PDR-12 (subwoofer)	$420 each

Note: All information supplied by the manufacturers.
* Manufacturers' quoted prices; dealer prices vary.
** Manufacturer did not supply information. N/A = not applicable.

Tweeter	Woofer	Enclosure	Magnetic shielding	Subwoofer power	Frequency response	Sensitivity	Impedance	Dimensions (WxHxD, inches)	Weight (pounds)	Finish	Additional features/notes
1-inch aluminum dome	6½-inch	vented	✔	N/A	40 Hz to 20 kHz ±3 dB	94 dB	8 ohms	8 x 33 x 13⅝	33	black ash vinyl	
1-inch aluminum dome	dual 5¼-inch	sealed	✔	N/A	60 Hz to 20 kHz ±3 dB	95 dB	8 ohms	18 x 6½ x 7½	15	matte black vinyl	
dual 1-inch aluminum domes	5¼-inch	sealed	—	N/A	60 Hz to 20 kHz ±3 dB	94 dB	8 ohms	15 x 6¾ x 6	8½	as above	
N/A	10-inch	vented	—	225 watts	29 Hz to 120 Hz ±3 dB	N/A	N/A	13½ x 15½ x 13½	29	as above	
1-inch soft dome	4-inch	sealed	✔	N/A	100 Hz to 20 kHz ±3 dB	85 dB	6 ohms	5 x 7⅜ x 6	5	black/ titanium vinyl	Subwoofer has speaker-level inputs, phase switch, and variable crossover.
1-inch soft dome	dual 4-inch	sealed	✔	N/A	100 Hz to 20 kHz ±3 dB	88 dB	4 ohms	13 x 5 x 6	9	as above	
N/A	8-inch paper	sealed	—	75 watts	37 Hz to 200 Hz ±3 dB	N/A	N/A	13¾ x 10⅛ x 11⅛	22	as above	
¾-inch metal dome	6½-inch polypropylene	vented	✔	N/A	47 Hz to 22 kHz ±3 dB	90 dB	8 ohms	7½ x 14 x 10½	15	black ash or cherry	FRx-Rears are omnipolar; subwoofer has variable crossover.
¾-inch metal dome	dual 4½-inch polypropylene	vented	✔	N/A	58 Hz to 22 kHz ±3 dB	89 dB	8 ohms	17 x 5½ x 11½	15	matte black	
dual ¾-inch metal domes	5½-inch polypropylene	sealed	—	N/A	70 Hz to 22 kHz ±3 dB	89 dB	8 ohms	12½ x 6⅞ x 5⅝	12	black or white	
N/A	10-inch polyproylene	vented	✔	100 watts	25 Hz to 100 Hz ±3 dB	N/A	N/A	15⅝ x 15⅝ x 15	45	black ash	
N/A	N/A	sealed	✔	N/A	285 Hz to 20 kHz ±3 dB	86 dB	8 ohms	5⅜ x 12½ x 1⅞	1½	white, neutral	System uses NXT flat-panel speaker technology, not conventional drivers. Subwoofer has speaker-level inputs, line-level input, speaker-level outputs, and level control.
N/A	6½-inch fiber	vented	✔	55 watts	48 Hz to 180 Hz ±3 dB	N/A	N/A	12½ x 20½ x 10	**	black	
1-inch metal dome	4-inch polymer	sealed	✔	N/A	90 Hz to 25 kHz ±3 dB	87 dB	6 ohms	4¾ x 7¾ x 5½	9	cherry, black oak, or white vinyl	Subwoofer has variable crossover.
1-inch metal dome	dual 4-inch polymer	sealed	✔	N/A	70 Hz to 25 kHz ±3 dB	88 dB	8 ohms	11¾ x 4¾ x 5½	13	black oak or white vinyl	
N/A	10-inch long-throw	vented	—	120 watts	27 Hz to 180 Hz ±3 dB	N/A	N/A	12½ x 12½ x 12½	33	black oak vinyl	
1-inch dome	dual 5-inch polypropylene	sealed	✔	N/A	90 Hz to 20 kHz ±3 dB	86 dB	8 ohms	6⅝ x 14¼ x 6	11⅛	black or white	Subwoofer has speaker- and line-level inputs, variable crossover, and polarity switch.
N/A	10-inch paper	vented	—	100 watts	40 Hz to 160 Hz ±3 dB	N/A	N/A	15½ x 15 x 15	40½	black diamond	
1-inch soft dome	6½-inch long-throw	sealed	✔	N/A	57 Hz to 25 kHz ±3 dB	86 dB	8 ohms	7¼ x 11⅝ x 8½	10	high-gloss black or white laminate	Fluid-cooled tweeters on all speakers.
1-inch soft dome	dual 4½-inch	sealed	✔	N/A	85 Hz to 25 kHz ±3 dB	86 dB	8 ohms	16 x 5½ x 8	13	high-gloss black laminate	
N/A	dual 6½-inch long-throw	vented	—	150 watts	33 Hz to 180 Hz ±3 dB	N/A	N/A	11⅜ x 14⅜ x 16	38	as above	
¾-inch dome	6½-inch polypropylene	vented	—	N/A	50 Hz to 20 kHz ±2 dB	89 dB	8 ohms	7¾ x 13 x 10¾	21	black ash, dark or light cherry	Surrounds can be switched between dipole and bipole modes; magnetic shielding optional on CT-41.
¾-inch dome	5½-inch polypropylene	vented	✔	N/A	50 Hz to 20 kHz ±2 dB	90 dB	8 ohms	22 x 6¾ x 8	17	black graphite	
dual ¾-inch ceramic domes	dual 5½-inch polypropylene	sealed	—	N/A	60 Hz to 20 kHz ±** dB	89 dB	8 ohms	9¾ x 10½ x 7	27	black graphite or white	
N/A	12-inch	vented	—	110 watts	25 Hz to 150 Hz ±2 dB	N/A	N/A	14½ x 16¼ x 19	41	black ash, dark or light cherry	

home theater speaker systems



Phase Technology Teatro 7.5 system



Pinnacle Classic Gold system



Polk Audio System RM7500



PSB Image 2B, Image 8C, Image 1B, and SubSonic 6



Sound Dynamics RTS-P100, RTS-C2, and RTS-1



Tannoy mX1, mXC, mXR, and PS110B



Velodyne Classic system

MANUFACTURER	Model	Price*
Phase Technology 6400 Youngerman Circle Jacksonville, FL 32244 904-777-0700 www.phasetech.com ***Teatro 7.5 system*** Total: $1,535	Teatro 7.5 VDT (front L/R)	$650 a pair
	Teatro 6.5 (center)	$225 each
	Teatro 4.5 (surrounds)	$260 a pair
	Power 10 (subwoofer)	$400 each
Pinnacle 170 Express St. Plainview, NY 11803 516-576-9052 www.pinnacle-speakers.com ***Classic Gold system*** Total: $1,415	Classic Gold Mini-Monitor (front L/R)	$395 a pair
	Classic Gold Mini Center	$375 each
	Classic Gold Surrounds	$295 a pair
	AC Sub 100 (subwoofer)	$350 each
Polk Audio 5601 Metro Dr. Baltimore, MD 21215 800-377-7655 www.polkaudio.com ***System RM7500*** Total: $1,600	front L/R, surrounds	not sold separately
	center	as above
	subwoofer	as above
PSB 633 Granite Ct. Pickering, Ontario Canada L1W 3K1 888-772-0000 www.psbspeakers.com Total: $1,600	Image 2B (front L/R)	$400 a pair
	Image 8C (center)	$300 each
	Image 1B (surrounds)	$300 a pair
	SubSonic 6 (subwoofer)	$600 each
Sound Dynamics 3641 McNicoll Ave. Scarborough, Ontario Canada M1X 1G5 416-321-1800 www.sound-dynamics.com Total: $1,600	RTS-P100 (front L/R, subwoofer)	$1,100 a pair
	RTS-C2 (center)	$300 each
	RTS-1 (surrounds)	$200 a pair
Tannoy 300 Gage Ave., Suite 1 Kitchener, Ontario Canada N2M 2C8 519-745-1158 www.tannoy.com Total: $1,260	mX1 (front L/R)	$280 a pair
	mXC (center)	$280 each
	mXR (surrounds)	$200 a pair
	PS110B (subwoofer)	$500 each
Velodyne 1070 Commercial St. Suite 101 San Jose, CA 95112 408-436-7270 www.velodyne.com ***Classic system*** Total: $1,260	CT-41 (front L/R, surrounds)	$240 a pair
	CT-42BV (center)	$180 each
	CT-120 (subwoofer)	$600 each

Note: All information supplied by the manufacturers.
* Manufacturers' quoted prices; dealer prices vary.
N/A = not applicable.

Tweeter	Woofer	Enclosure	Magnetic shielding	Subwoofer power	Frequency response	Sensitivity	Impedance	Dimensions (WxHxD, inches)	Weight (pounds)	Finish	Additional features/notes
1-inch soft dome	7-inch titanium	vented	✔	N/A	38 Hz to 20 kHz ±3 dB	90 dB	8 ohms	8¼ x 36½ x 11¾	44	ebony ash or rosewood laminate	Subwoofer has variable crossover; magnetic shielding optional on Power 10.
1-inch soft dome	5¼-inch titanium	vented	✔	N/A	56 Hz to 20 kHz ±3 dB	90 dB	8 ohms	18 x 7 x 8¼	18	as above	
1-inch soft dome	5¼-inch titanium	vented	✔	N/A	58 Hz to 20 kHz ±3 dB	89 dB	8 ohms	6 x 11½ x 8¼	24	as above	
N/A	10-inch	vented	—	100 watts	35 Hz to 180 Hz ±3 dB	N/A	N/A	14½ x 15 ¾ x 14⅞	35	black ash woodgrain laminate	
1-inch dome	5¼-inch	vented	—	N/A	45 Hz to 21 kHz ±3 dB	92 dB	8 ohms	7⅛ x 13 x 8⅜	12½	black vinyl	Fluid-cooled tweeters on all speakers; subwoofer has phase switch, variable crossover, and anti-clipping circuit to prevent distorted bass.
1-inch dome	dual 5¼-inch	sealed	✔	N/A	80 Hz to 21 kHz ±3 dB	93 dB	8 ohms	18⅜ x 7⅛ x 7⅛	20	as above	
¾-inch dome	dual 3-inch	sealed	—	N/A	70 Hz to 20 kHz ±3 dB	89 dB	8 ohms	5⅝ x 11¾ x 3¾	5½	white vinyl	
N/A	10-inch	vented	—	100 watts	33 Hz to 150 Hz ±3dB	N/A	N/A	13 x 13 x 13	22	black vinyl	
1-inch soft dome	5¼-inch polymer	vented	✔	N/A	90 Hz to 22 kHz ±3 dB	89 dB	8 ohms	9½ x 11½ x 5½	10	high-gloss black	Center-speaker crossover has one driver roll off above 1,800 Hz to avoid comb-filter effects. Subwoofer has speaker- and line-level inputs, phase switch, and variable crossover.
1-inch soft dome	dual 5¼-inch polymer	vented	✔	N/A	90 Hz to 22 kHz ±3 dB	91 dB	8 ohms	21½ x 6¼ x 5½	16	as above	
N/A	dual 10-inch polymer	vented	—	165 watts	28 Hz to 125 Hz ±3 dB	N/A	N/A	17½ x 18¾ x 18¾	65	as above	
1-inch soft dome	6½-inch polypropylene	vented	✔	N/A	59 Hz to 20 kHz ±1½ dB	91 dB	6 ohms	8 x 15¼ x 11¼	15	black ash or cherry	Ferrofluid-cooled tweeters on all speakers; subwoofer has speaker- and line-level inputs, phase switch, and variable crossover.
1-inch aluminum dome	dual 5¼-inch polypropylene	vented	✔	N/A	65 Hz to 20 kHz ±1½ dB	92 dB	6 ohms	23 x 6½ x 11¼	23	black ash	
1-inch aluminum dome	5¼-inch polypropylene	vented	✔	N/A	70 Hz to 20 kHz ±1½ dB	91 dB	6 ohms	6½ x 13 x 9¼	12	black ash or cherry	
N/A	12-inch fiber	vented	—	120 watts	25 Hz to 150 Hz ±3 dB	N/A	N/A	15 x 20 x 15	40	black ash	
1-inch textile dome	three 6½-inch polypropylene	vented	—	100 watts	25 Hz to 25 kHz ±3 dB	93 dB	8 ohms	10⅛ x 42 x 14¾	65	black ash or light birch	Two of the three woofers on the RTS-P100 powered by the internal amplifier; equalization and bass-contour controls.
dual 1-inch flared domes	dual 5½-inch polypropylene	vented	✔	N/A	47 Hz to 20 kHz ±3 dB	89 dB	8 ohms	21 x 7¼ x 10¾	24	black ash	
½-inch flared dome	5½-inch polyproylene	vented	—	N/A	55 Hz to 20 kHz ±3 dB	89 dB	8 ohms	7⅝ x 10¾ x 7	8	black ash or white	
1-inch soft dome	5-inch paper	vented	—	N/A	55 Hz to 20 kHz ±3 dB	88 dB	8 ohms	6½ x 11¾ x 8¾	9	light maple or dark oak	The mX1 cabinet has double-layer top panel to reduce energy leakage. Subwoofer has variable crossover.
1-inch soft dome	dual 4-inch paper	vented	✔	N/A	52 Hz to 20 kHz ±3 dB	88 dB	8 ohms	16½ x 6 x 7¾	15	as above	
1-inch soft dome	4-inch paper	vented	—	N/A	80 Hz to 20 kHz ±3 dB	88 dB	8 ohms	5¾ x 9½ x 5⅜	5½	as above	
N/A	10-inch	vented	—	110 watts	31 Hz to 150 Hz ±3 dB	N/A	N/A	11⅜ x 17½ x 16½	33	black ash	
¾-inch soft dome	4-inch long-throw	sealed	✔	N/A	80 Hz to 20 kHz ±2 dB	89 dB	8 ohms	5½ x 8½ x 6¼	7½	black or white	
¾-inch soft dome	dual 4-inch long-throw	sealed	✔	N/A	80 Hz to 20 kHz ±1½ dB	89 dB	8 ohms	13 x 5½ x 6¼	14	black	
N/A	12-inch	vented	—	170 watts	25 Hz to 120 Hz ±3 dB	N/A	N/A	15 x 18 x 19	60	black	

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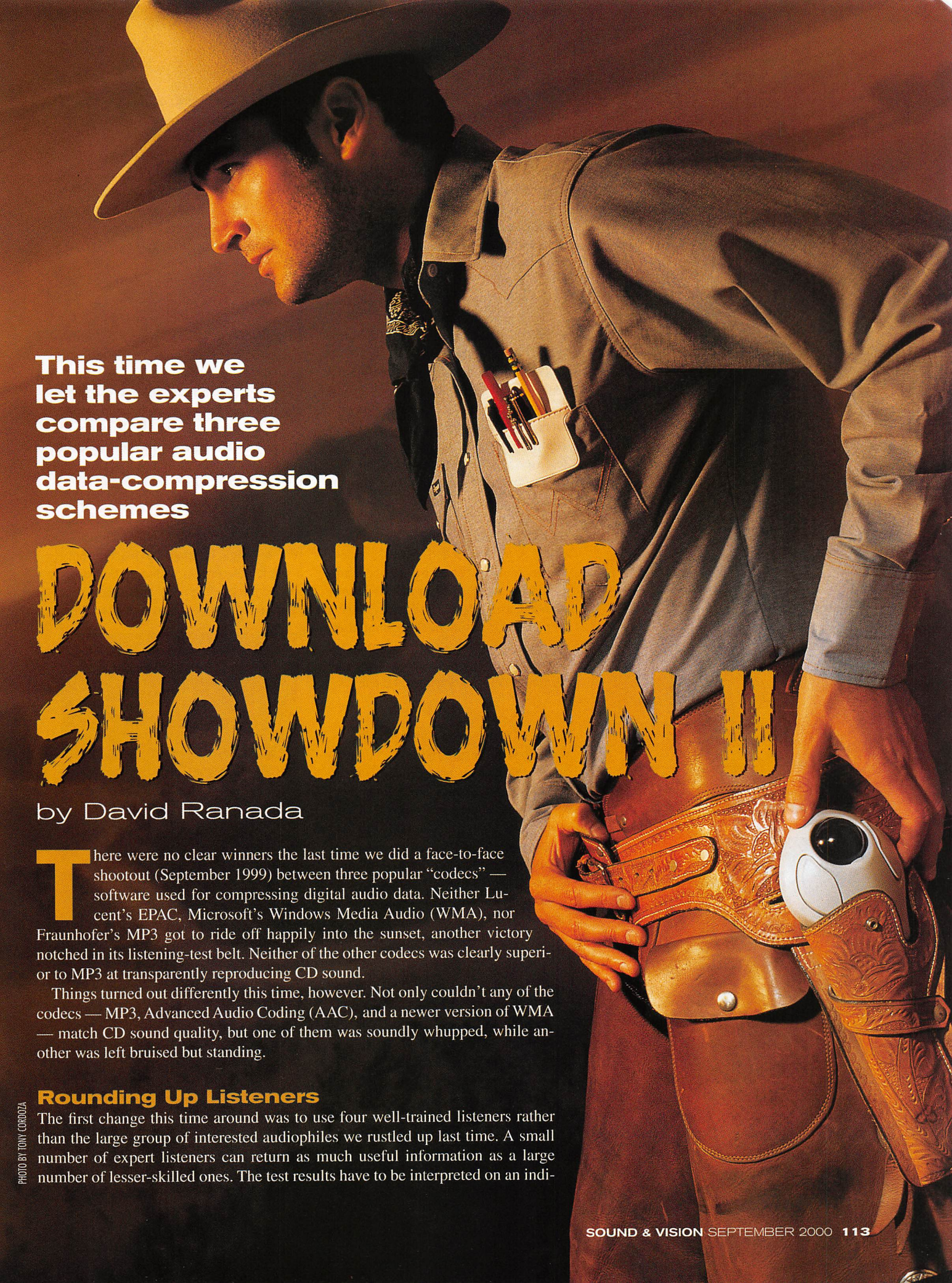
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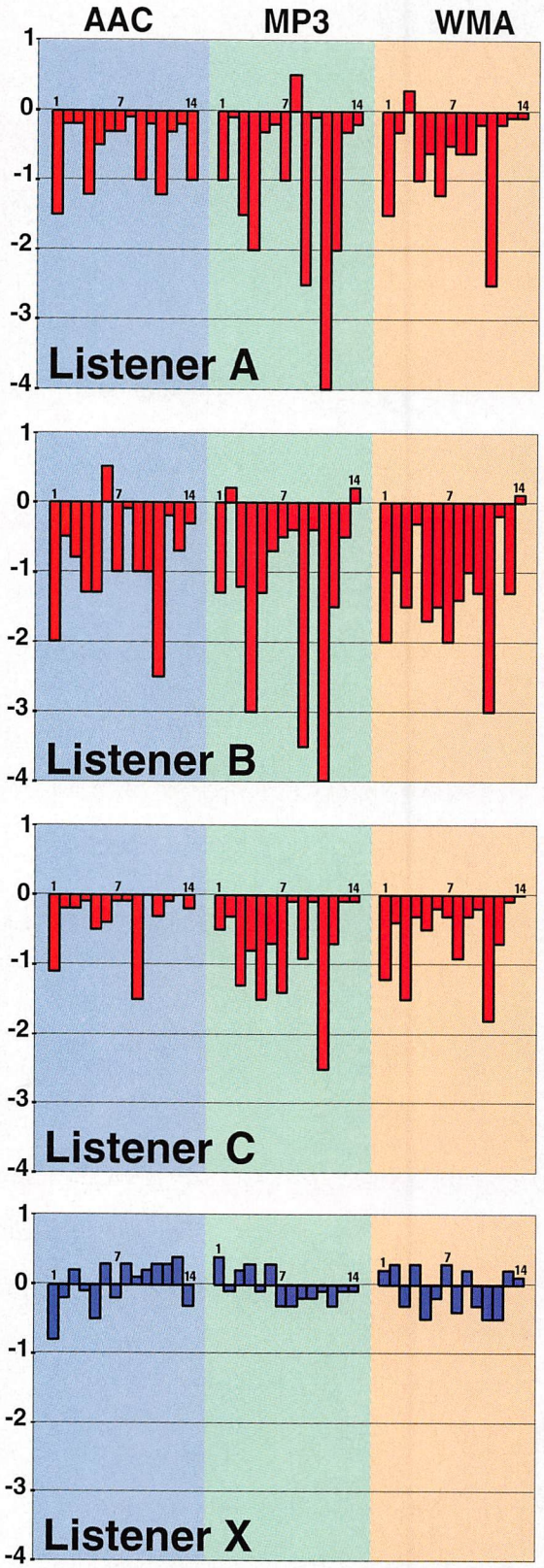
There were no clear winners the last time we did a face-to-face shootout (September 1999) between three popular "codecs" — software used for compressing digital audio data. Neither Lucent's EPAC, Microsoft's Windows Media Audio (WMA), nor Fraunhofer's MP3 got to ride off happily into the sunset, another victory notched in its listening-test belt. Neither of the other codecs was clearly superior to MP3 at transparently reproducing CD sound.

Things turned out differently this time, however. Not only couldn't any of the codecs — MP3, Advanced Audio Coding (AAC), and a newer version of WMA — match CD sound quality, but one of them was soundly whupped, while another was left bruised but standing.

Rounding Up Listeners

The first change this time around was to use four well-trained listeners rather than the large group of interested audiophiles we rustled up last time. A small number of expert listeners can return as much useful information as a large number of lesser-skilled ones. The test results have to be interpreted on an indi-

PHOTO BY TONY CORDOZA



The bars show how each listener scored the three codecs on each of 14 test tracks. The 0 line represents the CD reference. A negative number means the listener thought the codec sounded worse than the reference. A positive number means the listener mistook the codec for the reference.

vidual basis, however, since statistical techniques such as score averaging are invalid with a small group.

Where better to find skilled listeners than at the R&D departments of the codec developers themselves? We recruited codec gunslingers directly from Fraunhofer, Microsoft, and Dolby Labs, which handles the licensing for AAC. Each listener, along with yours truly, was corralled in the ***Sound & Vision*** sound room for a day to judge how each codec's results compared with the original CD sound using a variety of codec-critical music tracks.

The test was designed so that the listeners couldn't tell which codec's results they were listening to. Because every listener but me was an employee of a codec company, it was important to keep the test free of company-oriented bias. Using a computer-generated random-permutation table to control the order in which the tracks were presented allowed us to thoroughly scramble the comparisons. A track encoded in MP3, for example, could just as easily have been followed by another MP3 track as by one encoded using AAC or WMA. Since I prepared the initial track permutations and thus knew the sequence, executive editor Brian Fenton prepared a separate permutation for my own go at the test.

Straight Shootin'

Along with using well-trained listeners, we helped to ensure the test's "double-blind" fairness by using a computer to control the track comparisons. This was a vast improvement over the CD-R containing "pre-cooked" comparisons that we distributed for the last test. The custom-written Windows program (not publicly available) was designed to facilitate bit-accurate, rapidly switched sound-file comparisons.

Each reference musical excerpt consisted of 30 seconds or less of a 16-bit CD recording, stored on hard disk as an audio .wav file. This data was first encoded by each codec, and each result was decoded back into another 16-bit .wav file. In each test segment, the Windows program randomly assigned a reference file to an onscreen button labeled either A or B. One of the corresponding codec-processed files was assigned to whichever button, A or B, wasn't assigned to the reference. The reference was also assigned to a third button labeled Reference. By clicking on buttons A, B, or Reference, the listener could go back and forth instantaneously, with no interruption in the flow of the music.

For each excerpt, each listener was asked to give a score between 1.0 (worst sound quality) and 5.0 (can't tell the difference) to whichever button, A or B, he thought was assigned to the codec-encoded/decoded track. A score of 5.0 was given to the A or B button he thought was a duplicate of the reference track. (We converted these numbers for the bar graphs at left so that they run from 0, for best quality, to –4, for worst.) The computer recorded the button assignments, scored the listener's accuracy, and created a report identifying the score he had given to each button in each comparison.

The program allowed the listeners to isolate a brief passage in the music (a fraction of a second, if need be) for repeated, continuously looped playback. This is essential in critical codec comparisons since the audible defects that codecs produce at high, near-CD-quality bit rates might be small and exist for only a single note or two within an entire 30-second passage. Dwelling on a short passage or a single note is very much *unlike*

Key to the Tracks

Space limitations prevent a full accounting of the musical excerpts we used (a complete list appears on our Web site), but the following short-form list is necessary to help decode the bar graphs. — *D.R.*

1. applause, private recording
2. Patricia Barber: *Cafe Blue,* "Too Rich for My Blood"
3. Johnny Cash, *Greatest Hits,* "I Walk the Line"
4. castanets, SQAM (lab-standard disc, rare)
5. Steely Dan: *Aja,* "Home at Last"
6. Dire Straits: *Brothers in Arms,* "Ride Across the River"
7. drum set, homemade digital recording
8. Lauryn Hill: *The Miseducation of Lauryn Hill,* "Ex-Factor"
9. harpsichord, private recording
10. Danielpour: *Anima Mundi,* "*Nox Tenebroso*"
11. Pearl Jam: *Vs.,* "Daughter"
12. pitch pipe, private recording
13. Stravinsky: *L'Histoire du Soldat,* "Ragtime"
14. Stravinsky: *L'Histoire du Soldat,* "Pastorale"

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What We Tested

Since Internet audio codecs are moving targets — new versions of the software can appear without warning — every codec test should state exactly which version of the software was used. Unlike WMA, both MP3 and ACC have sound-file structures that are international standards, so you are less likely to find marked variations in the decoder software performance for those systems. The *encoders* for all three systems are wide open, however, which is why sound quality can vary according to the encoder used.

We decided to go after the best available MP3 encoder. So we tested the latest "command line" encoder (it runs in a DOS window) from the system's originator, Fraunhofer Institut für Integrierte Schaltungen in Erlangen, Germany. This version (3.1.1, dated April 28, 2000) is *not* the same Fraunhofer MP3 high-speed CD-ripping encoder that's embedded in jukebox software such as MusicMatch Jukebox 5.1. Instead, it's a *very* slow-motion program that takes its time to do the best MP3 encoding possible. It was created to prepare the master MP3 files for legitimate record-company downloading. For MP3 decoding back to computer .wav files, I again used the Audioactive decoder Version 1.1.2 from Telos Systems. Fraunhofer also provided us with the similarly slow-processing command-line AAC encoder, Version 1.2 (dated April 20, 2000) and a Windows-based AAC decoder.

We had to practically sign our lives away to get a prerelease (beta) version of Microsoft's latest WMA codec, which was scheduled to be released at the same time as the official release of Windows Media Player 7. It, too, is a command-line program, but it ran considerably faster than either Fraunhofer system. Microsoft also provided us with a command-line decoder.

As usual with codec tests, the results and conclusions reached here pertain only to the codec versions tested and to their performance at a bit rate of 128 kilobits per second. General conclusions as to their performance at other bit rates are *not* warranted. — *D.R.*

normal music listening, but it's necessary to ensure that the highest audio standards are being met.

The listening setup is described in complete detail on our Web site (www.soundandvisionmag.com). Suffice it to say here that we used the bit-accurate SPDIF output of a high-quality sound card, the CardDeluxe from Digital Audio Labs, driving a high-quality digital preamplifier. Listeners used their own favorite high-quality headphones throughout.

Selecting Sharpshooters

The four graphs on page 114 represent the test results for each listener. The bars show how the listener scored the three codecs on each test track. The horizontal "0" line represents the CD reference track. A negative number means the listener thought the codec sounded worse than the reference. The *more* negative the number, the worse the perceived sound quality. A positive score means that the listener mistook the codec for the reference track. Anything approaching an even mix of positive and negative results indicates that the listener couldn't hear the differences and was essentially guessing.

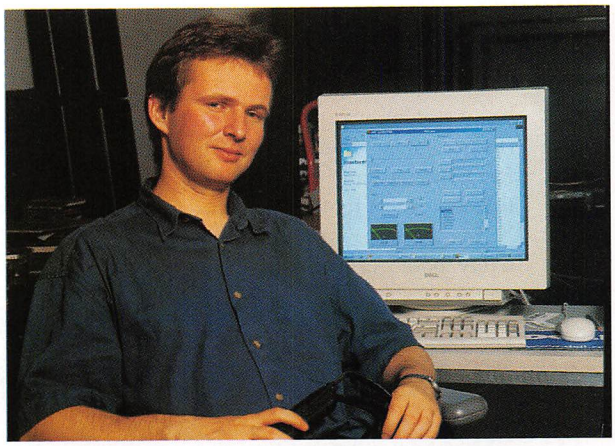
All codec listening tests are as much a test of listener skill as of codec sound quality. In this test, where there were only four listeners, the abilities of each auditor became extremely significant. Unfortunately, one listener, who will remain anonymous and is identified on his graphs as Listener X, provided test results that were essentially random and therefore unusable. Because the standard statistical tests for listener reliability also require that we drop the results for Listener X, we have done so. Listener X isn't a total loss, however, since his results will give you some idea of how the vast majority of ordinary, untrained listeners would likely have fared in a test like ours.

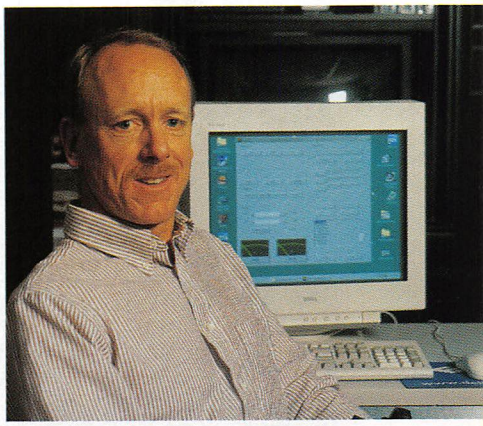
Fortunately, the other three listeners — whose graphs are labeled A, B, and C — proved to be skilled indeed. None was perfect, however. Listener C gave a score of 0/0 twice (Track 10, AAC and Track 14, WMA), which meant that he twice failed to tell the difference between the reference and the codec, while both Listeners A and B occasionally gave positive scores, indicating a complete misidentification (twice and four times, respectively).

The best way to interpret these graphs is on a listener-by-listener basis. Listener B, for example, gave overall poorer scores — a fact that would be lost in any averaging process, but it might be qualitatively significant in judging codec fidelity.

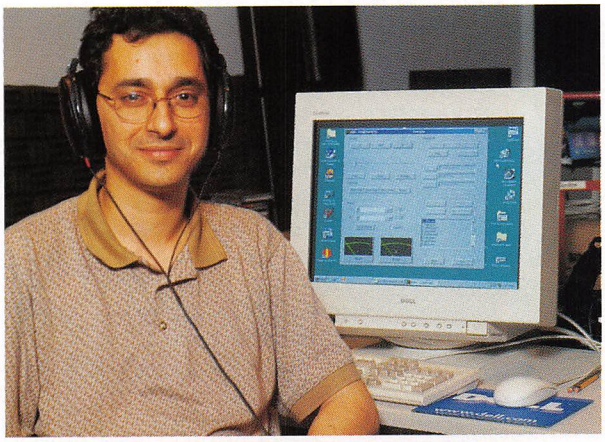
One Left Standing

It's easy to see, by simply eyeballing the negative scores for each codec, that the loser in this match-up was MP3. Not only did it generate the most negative results for all three listeners, but it seemed especially objectionable to Listeners B and C. Espe-





Sharpshooters Alexander Groeschel, Fraunhofer (top); Dane Grant, Dolby Labs (right); and Amir Majidimehr, Microsoft (bottom).



cially striking was the result for Track 11 (Pearl Jam's "Daughter"), where MP3 fared spectacularly poorly with all of the listeners except for the discredited Listener X. But the same track also produced relatively poor results with the other two codecs, except for Listener A and AAC (see "The Codec Killers," below).

The notes that I took while listening to each track indicate that MP3 produced an "amplitude modulation" effect on the cymbals in Track 2, where the faint unsteadiness in the original sound was exaggerated by the encoding. Other effects included obvious "smearing" of the transients in Track 4 (a castanet track), "watery" sounding woodblocks in Track 6 (Dire Straits), and slight flutter-like wavering in Track 12 (pitch pipe). In the first Stravinsky excerpt (Track 13), the violin sound "leaked" from the left to the right channel on certain notes. (Subtle changes in imaging can occur with codec processing.)

While MP3 had the most negative results, AAC had the least, which makes it the winner. This is very clear from Listener C's data, less so with Listeners A and B. But even AAC couldn't always match the reference tracks' CD sound quality. All of the listeners felt it did a poor job with Track 1, which was a short segment of applause (this seems to have been a tough track in general). The few notes I made for AAC indicate an added "hiss" behind the applause, a slightly "watery" castanet sound, and a slight change in the timbre of a gong in the Dire Straits track.

Windows Media Audio fell between AAC and MP3 in overall quality. Listeners B and C gave it consistently poorer scores than AAC, but not as many very bad results as MP3. It sounded only slightly worse than AAC to Listener A. I found WMA to have problems with cymbals (Tracks 2, 7, and 11) and that it added a "hissy" quality to rapidly repeated percussive transients (Tracks 1, 5, and 13). But the latest version of WMA was *much* better at reproducing the castanets than the version we tested a year ago, which badly smeared the sound.

The Good, the Bad, and the Ugly

It's clear from the results that both WMA and, especially, AAC can come very close to producing CD-quality sound under the most critical conditions and do substantially better at 128 kbps than even the best MP3. Makers of compressed-data playback devices (like portable players and jukeboxes) and jukebox software packages would be doing critical listeners a service by incorporating both of these codecs into their products. Official software providers should also consider AAC and WMA in marketing their wares.

The dark horse in all this testing is Sony's ATRAC-3, which at least one major label plans to use for official downloading of its music. We couldn't get a suitable version of ATRAC-3 in time for this article, but we eagerly await the opportunity to put it under the listening-test gun. S&V

The Codec Killers



GLEN E. FRIEDMAN/EPIC

Pearl Jam's "Daughter" is guaranteed to trip up almost any codec.

This innocuous-looking group of musicians produced the one easily obtained track that consistently scored very poorly in our codec listening test. The opening half minute or so of "Daughter" from Pearl Jam's *Vs.* — I actually used the track on the CD-single (Epic 34K77938) and not from the album — is a sure-fire, double-barreled codec killer. The MP3-encoded version was the only track to receive the worst-possible score, 1.0 (represented by a –4.0 in the graphs), from two listeners at once. In fact, it received the only 1.0 scores in the entire test. And neither AAC nor WMA could encode it even at near-CD quality.

Casually heard, "Daughter" seems to be unstressful pop music that should be easy to encode well. After all, the critical passage, starting about 15 seconds in, consists mainly of a closely miked acoustic guitar strummed on the left channel and a cymbal and tambourine setting rhythm on the right. But what's easy on the ears can be murder on a codec, especially when, as here, two very different demands are being made on it. (This difficulty in predicting codec misbehavior from instrumentation alone is one of the main problems in the selection of program material for codec testing.) The left-channel guitar is, in codec parlance, mostly "tone-like," with easily discernible musical pitches, while the right-channel cymbal and tambourine are "noise-like," as are many percussion instruments that are very difficult for codecs.

These two types of signals require very different behaviors from a codec, and having them occur simultaneously leads to artifacts that are more clearly audible here than on most music. With MP3 my notes indicate "bad distortion" that sounded not unlike phono-cartridge mistracking from the bad old days of analog. With WMA even the cymbal from the beginning of the track sounded "metallic," like silverware rubbing together, with overemphasized sibilants of the vocal later in the segment. AAC, the codec that scored the best on this track, produced fleeting but still audible traces of both effects. So if you want to roll your own codec comparison with very critical program material, start by looking for these effects in "Daughter." Now, if Pearl Jam had only thrown in a couple of other killer instruments, like a harpsichord and some castanets . . . — *D.R.*

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Eye on EX

We take the new Surround EX format for a spin

by Ken C. Pohlmann

You're just getting used to your new 5.1-channel home theater system. You've hooked up the main speakers and subwoofer, and the sound is swirling around your comfy chair. It's a wonderful feeling, knowing that you own the latest and greatest in surround sound technology. Except that 5.1 isn't the latest anymore. Something new has entered the scene, coming in through the back door.

It's called Dolby Digital Surround EX — "EX" because it *ex*tends the 5.1-channel format by adding another channel of information between the left and right surround channels. The big questions, of course, are: Does this new flavor of surround sound really improve the movies-at-home experience? And does it make your old 5.1-channel system obsolete? To find out, I upgraded my home theater for THX Surround EX compatibility (THX licenses "official" home theater decoders for Dolby Digital Surround EX soundtracks), gathered up as many EX-encoded discs as I could find, and settled in for a weekend of movie watching and critical listening.

ILLUSTRATION BY ERIC YANG

Why Another Channel?

You're probably wondering, "What's wrong with plain 5.1-channel Dolby Digital surround sound?" Well, nothing. The 5.1-channel format does an excellent job. With five main speakers — front left, center, and right plus two side-mounted surrounds — the sound plunges you into the middle of the action. The drawback is that there's no center speaker in the back to correspond with the center speaker in front. The sound mixers who create those fabulously enveloping movie soundtracks find it hard to make sound travel from front to back. Some effects seem to jump from one surround to the other as they're panned to the rear, making scenes like a jet flyover seem less realistic. The obvious solution is to fill that gap with a surround speaker (or two) directly behind the listener.

That's exactly what Gary Rydstrom at Lucasfilm and the sound engineers at Dolby Labs thought. But for the best effect,

that extra speaker needs its own channel of audio information. So they devised a way to add an extra surround channel to Dolby Digital 5.1 soundtracks — called the "back surround" or "center surround" — and named the process Surround EX.

More than 4,600 movie theaters worldwide are equipped for Surround EX playback, thanks largely to George Lucas's insistence last year that theaters upgrade to EX in exchange for the privilege of showing *The Phantom Menace*. Although THX certification isn't required for EX playback, THX-approved theaters already have most of the equipment necessary to play EX properly. For 5.1-channel playback, they divide the surround speakers along their side and rear walls into two surround channels. With EX, the center surround channel is conveyed by two or more of the rear surround speakers.

Now that it's been established in theaters, Surround EX is coming home. Receivers and A/V preamps that include EX processing add a back surround channel to the Dolby Digital 5.1 format. The mono audio signal for the new back channel is derived from the existing left/right surround channels, with the information matrixed onto the L/R signals using the same steering techniques used to create a front center channel in the old Dolby Pro Logic system.

Fortunately, there's no need to worry about incompatibility. Movie soundtracks encoded with Surround EX can be played over an existing Dolby Digital 5.1 system with excellent results. But if an EX decoder is present, it extracts the back surround information and directs it to the additional speaker (or two). In other words, Surround EX is "backward-compatible" with Dolby Digital 5.1. (Not to be outdone, DTS has developed a similar format, which it calls Extended Surround, or DTS-ES, in both discrete and matrixed versions, but I haven't heard it yet. And it isn't clear whether all THX Surround EX decoders will correctly process the extra channel in a matrixed DTS-ES soundtrack.)

Surround EX decoding is available in a growing number of THX Ultra-certified components, including flagship receivers from Denon, Marantz, and Onkyo. A few companies, including Yamaha, Sherwood, and the new Internet-based brand Outlaw Audio, offer generic "6.1-channel" processors that they claim are as effective as the official THX Surround EX decoders.

THX has always championed the use of dipole surround speakers, arguing that diffusion is the key to more realistic (nonlocalized) surround sound. But in the case of Surround EX, while still recommending dipoles for the back surround channel, THX says that monopole speakers can also be used (whether a pair or just a single speaker).



The number of Dolby Digital Surround EX-encoded DVDs available is small but growing. The initial EX releases from the major

The Difference It Makes

For my weekend Surround EX movie fest, I installed a Denon AVR-4800 THX receiver, which contains a THX Surround EX decoder and line-level outputs for an external amplifier (an Onkyo M-508 in my case) to drive the extra back surround speakers. My speaker complement was M&K's 150THX system. I placed one SS-150THX dipole surround on each side of the listening position and a pair spaced a few feet apart behind the listening position for the EX channel.

With a short stack of EX discs at my side, I slouched down into my futon's sweet spot and grabbed the DVD player's remote. (You need to know which movies were mixed in EX because the DVD packages aren't specifically labeled as such.)

I started with *The World Is Not Enough*, a 007 action flick filled with music and sound effects coming from all around, including the sides and back. In the trademark opening, Bond turns and fires at the camera. With traditional L/R surround, the bullet thuds somewhere behind you. With the back surround channel, it hit the wall solidly right behind my head. The sound design of the Thames river boat chase drenched me with a synth score, crashes, explosions, and lots of water. The subsequent ski chase attacks you with diving parasails and lots of automatic-weapons fire — including bullets miraculously ricocheting off snow — then buries you in a surround sound avalanche. Later, the submarine sequence is filled with alarm buzzers, spraying water, undersea bubbles, and the obligatory final explosion. The EX channel helped raise the sonic immersion and realism a significant cut above 5.1-channel playback.

I'm sorry I missed *Fight Club* when it played in theaters, but DVD is the next best thing. David Fincher's witty, edgy, disturbing film uses the surround channels sparingly but very effectively. More important, the sound design is creative. For example, just when I'd given up listening for anything significant from the surrounds, hearing only some weirdly reverberated airport

Surround EX on Disc

Now Available

Austin Powers: The Spy Who Shagged Me (New Line)
Bats (Columbia TriStar)
The Bone Collector (Universal)
Fight Club (20th Century Fox)
The Haunting (DreamWorks)
The Messenger: The Story of Joan of Arc (Columbia TriStar)
The World Is Not Enough (MGM)

Coming Soon

Mission to Mars (Buena Vista), due Sept. 12
Terminator 2 — The Ultimate DVD Edition (Artisan), due Aug. 29
Toy Story 2 (Buena Vista), due this fall

Future Releases

The Art of War (Warner)
Chicken Run (DreamWorks)
Gladiator (DreamWorks)
The Perfect Storm (Warner)
Pitch Black (USA)
Star Wars: Episode 1 — The Phantom Menace (20th Century Fox)
X-Men (20th Century Fox)

announcements coming out of the back speakers, they suddenly exploded with the sound of a full-throttle mid-air plane collision. When the fighting began, the surrounds snuck up on me with a synth score — the first hint of music back there. Later, when the Club is first announced, the music hit the surrounds again, and cries from the crowd accompanied the fist fight. In other words, the surround channels are used like a Greek chorus, concisely commenting on the action, and the back surround made the violent anti-establishment commentary even grittier and nastier.

Bats — a silly, low-budget thriller that features bats instead of Hitchcock's birds — uses the back surround channel aggressively but not always effectively. A lot of the musical score is panned to the back, along with the sounds of helicopter rotors, zooming airplanes, and of course, innumerable bat flyovers. Admittedly, this enhances immersion, but the soundtrack uses the back surround best for the kind of ambient sounds (wind, muttered conversation, rolling thunder, a bit of *bel canto* opera, mineshaft reverberation) that help place you in the environment. Surround EX can be more than whiz-bang — it can also be subtle. In fact, it almost made this movie watchable.

I also listened to some Dolby Digital 5.1 titles *without* EX coding. Technically, this isn't kosher because you'll get essentially random back surround information. But switching the back channel on and off proved that even without special EX encoding, the extra channel was helping to put me inside each scene.

For instance, *Godzilla* is a great surround-effects movie that's even better played in a 6.1-channel mode. The L/R surrounds are aggressively used throughout, and the signal extracted for the back channel provided even more immersion. *Godzilla*'s first 5 minutes dramatically place you on the sites of a nuclear explosion (love that heavenly choir) and the shredding of a storm-tossed supertanker. Later on, the destruction of Manhattan island (excluding the mighty edifice at 1633 Broadway) has enough surround-channel and bass energy to break any lease, and the added back channel only made it better.

The Mummy is another 5.1-channel movie that benefits from 6.1-channel playback. This flick has more surround sound effects than the Sahara has grains of sand, and the score is panned to the surrounds as well. In 6.1 mode, the back channel helped to plant the surround information firmly in the rear, enveloping me as securely in the sound field as a tightly wrapped mummy.

Getting EXtended

I was skeptical when I first heard about Surround EX, but I was won over when I actually listened to it. It's a viable enhancement that makes movie sound more realistic and exciting. Sure, some EX-encoded films fall flat (*The Haunting* and *Austin Powers: The Spy Who Shagged Me* were only marginally helped by EX), but that's not surprising since a lot of 5.1-channel soundtracks fall flat, too.

If you already own a 5.1-channel receiver, don't panic. You can still hear most of the soundtrack from EX-encoded discs, and careful speaker placement will give you plenty of immersion. Yes, you might be missing some of the potential thrill, but you can always upgrade somewhere down the road when more Surround EX DVDs will be available.

If you're in the market for a new receiver, however, you should at least audition a Surround EX setup. Depending on your budget, you might find that it doesn't cost a lot to add Surround EX capabilities to your system. More EX-capable receivers should be available soon, with some models providing simple decoded line outputs to external amplifiers and others providing six or seven amp channels. Whichever way you go, 6.1-channel sound is the real deal. It's EX-cellent. S&V





studios include, from left to right, *The World Is Not Enough*, *Fight Club*, *The Haunting* (1999), and *The Bone Collector*.

DTV ON THE

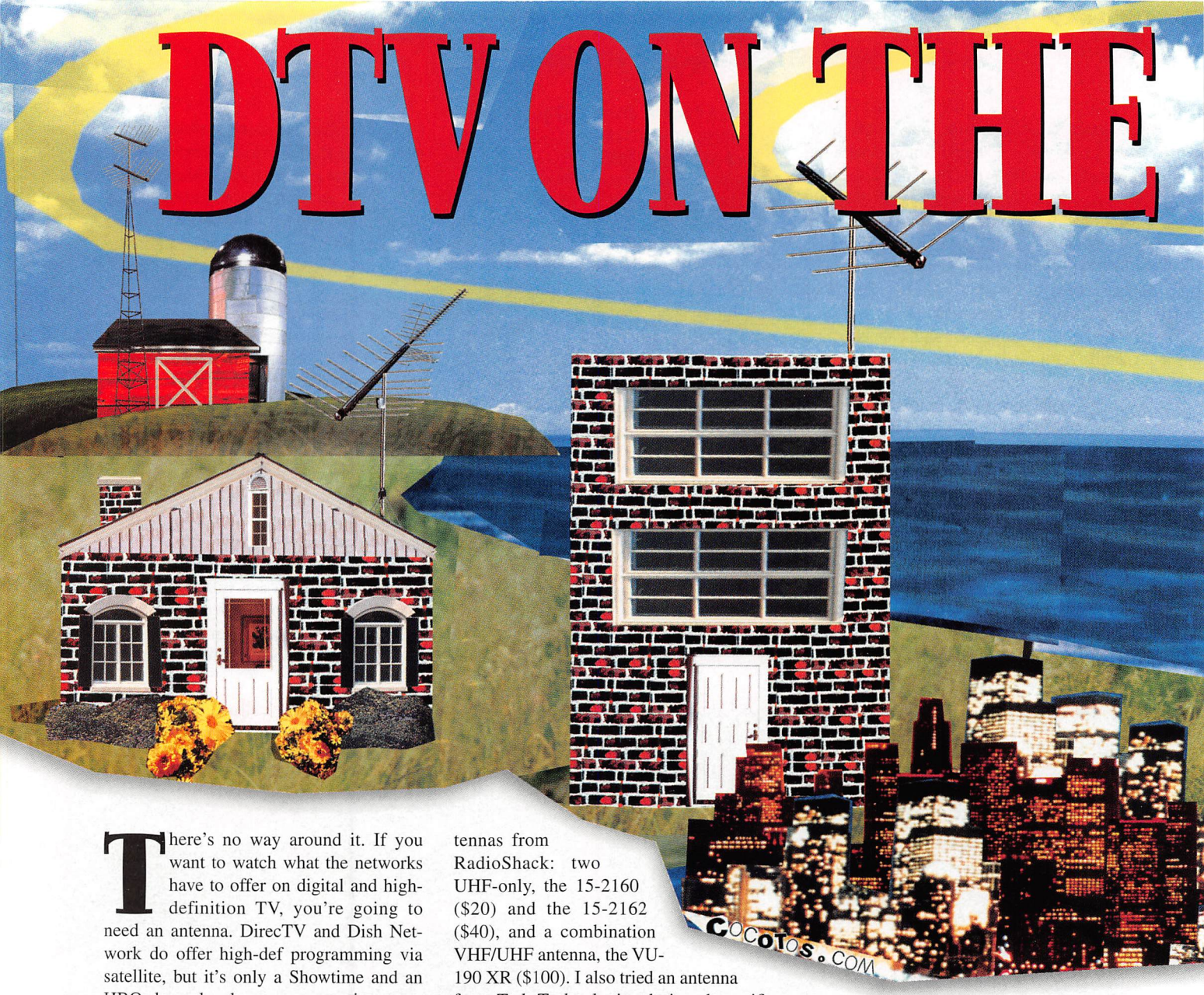


ILLUSTRATION BY TOM NICK COCOTOS

by Brian C. Fenton

There's no way around it. If you want to watch what the networks have to offer on digital and high-definition TV, you're going to need an antenna. DirecTV and Dish Network do offer high-def programming via satellite, but it's only a Showtime and an HBO channel and some pay-per-view movies. And while the cable and consumer-electronics industries *are* getting closer to an agreement on how to deliver DTV over cable, don't expect to be able to buy a cable-ready digital set any time soon.

At press time, 134 U.S. stations in 49 TV markets were broadcasting digitally. Leading the way were Los Angeles and San Francisco, each with eight digital signals on the air, and Philadelphia with seven. Ironically, New York City, the country's largest TV market, has only two DTV stations, the local CBS and Fox affiliates. They provided the primary signals for this antenna test.

To get a sense of what a first-time DTV buyer can expect, I gathered four antennas and set them up at my Long Island home. Since I wanted to isolate performance differences between antenna *types* more than differences between antennas from different manufacturers, I started with three antennas from RadioShack: two UHF-only, the 15-2160 ($20) and the 15-2162 ($40), and a combination VHF/UHF antenna, the VU-190 XR ($100). I also tried an antenna from Terk Technologies designed specifically for high-definition TV reception, the HDTV60 ($400). I viewed the results on a 36-inch RCA MM3600 TV paired with an RCA DTC100 set-top DTV decoder.

TV Reception Basics

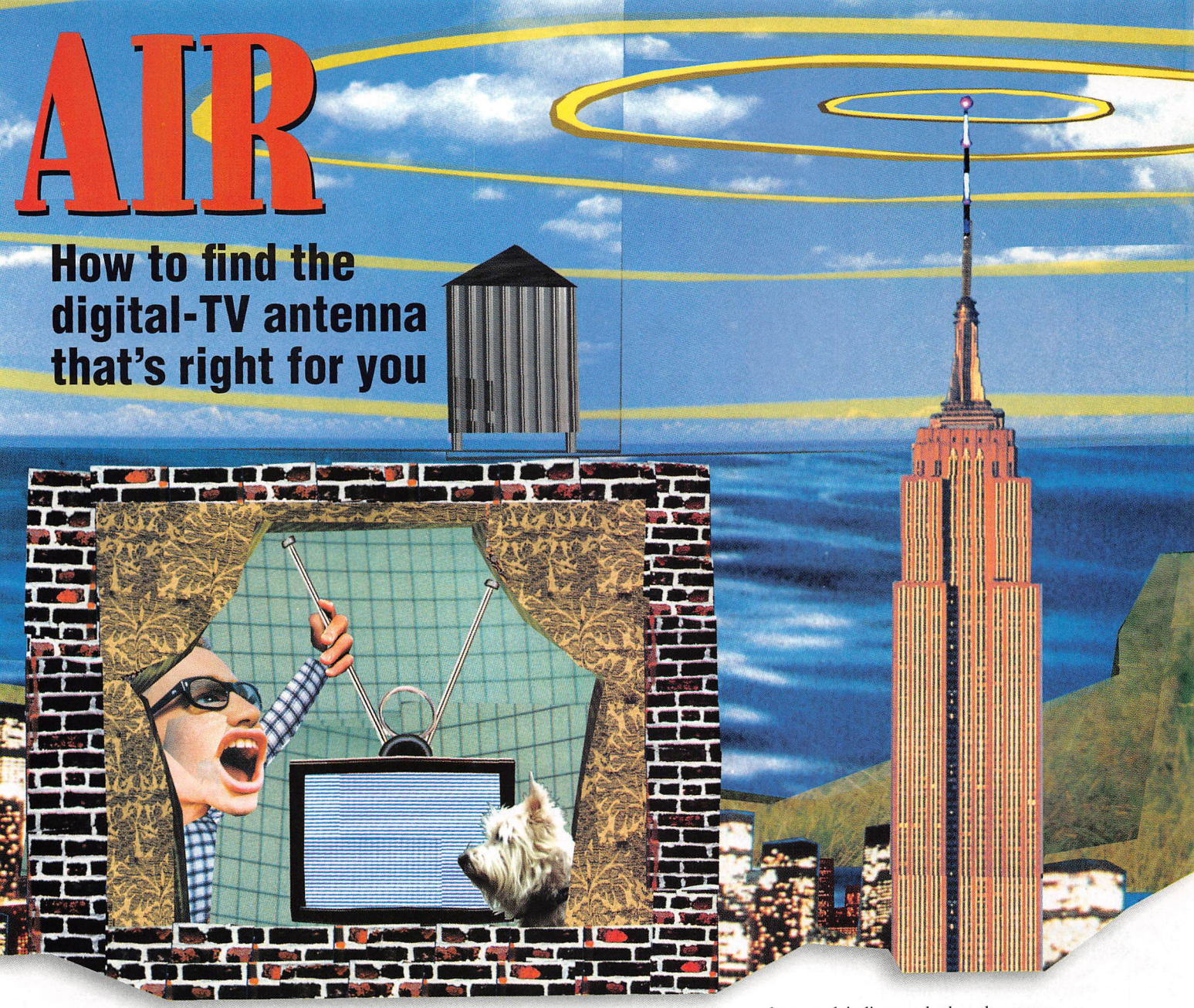
Unlike lower-frequency signals, like AM or shortwave radio, TV signals don't follow the curvature of the earth or bounce off the ionosphere. To receive a signal, your antenna needs a clear line of sight to the transmitting antenna. That's why the antennas for TV transmitters are usually located at the highest point in a city — Mount Sutro in San Francisco, the Sears Tower and Hancock Building in Chicago, and the World Trade Center and Empire State Building in New York. For best reception, you'll also want to get your own antenna as high as possible.

My house is about 35 miles due east of midtown Manhattan and about 60 miles southwest of Hartford/New Haven, which also has a digital station. My usual setup for off-air broadcasts uses two amplified VHF/UHF antennas — a Terk TV-50 and a Winegard Sensar SR-2190 — mounted in the attic and aimed toward New York. I get excellent reception on the UHF band (Channels 14 and up), good results on the VHF high band (Channels 7 through 13), and fair to poor results (watchable on a small screen, but hard to take on a big one) on the VHF low band (Channels 2 through 6). That's why I subscribed to New York's local channels via EchoStar's Dish Network as soon as they became available.

I tested the antennas primarily in my attic, about 24 feet above the ground, rotating each antenna for maximum signal

AIR

How to find the digital-TV antenna that's right for you



strength on each channel. I also mounted one of the antennas on my rooftop to see if its performance would improve. Although all manufacturers recommend outdoor mounting, I tested the antennas in my attic 1) because it's safer than crawling around on the roof, and 2) because I could easily move the antennas to find the optimal mounting location — a few inches can make a big difference. I wasn't too concerned with signal loss since my spectrum-analyzer measurements indicated that indoor and outdoor signal levels were virtually identical. The attic was also preferable because it let me use the minimum length of lead-in wire. At ultra high frequencies, signal loss over long lengths of coaxial cable and through splitters and the like is significant and can limit the performance of even the best antenna, requiring a signal amplifier to compensate.

Starting from Scratch

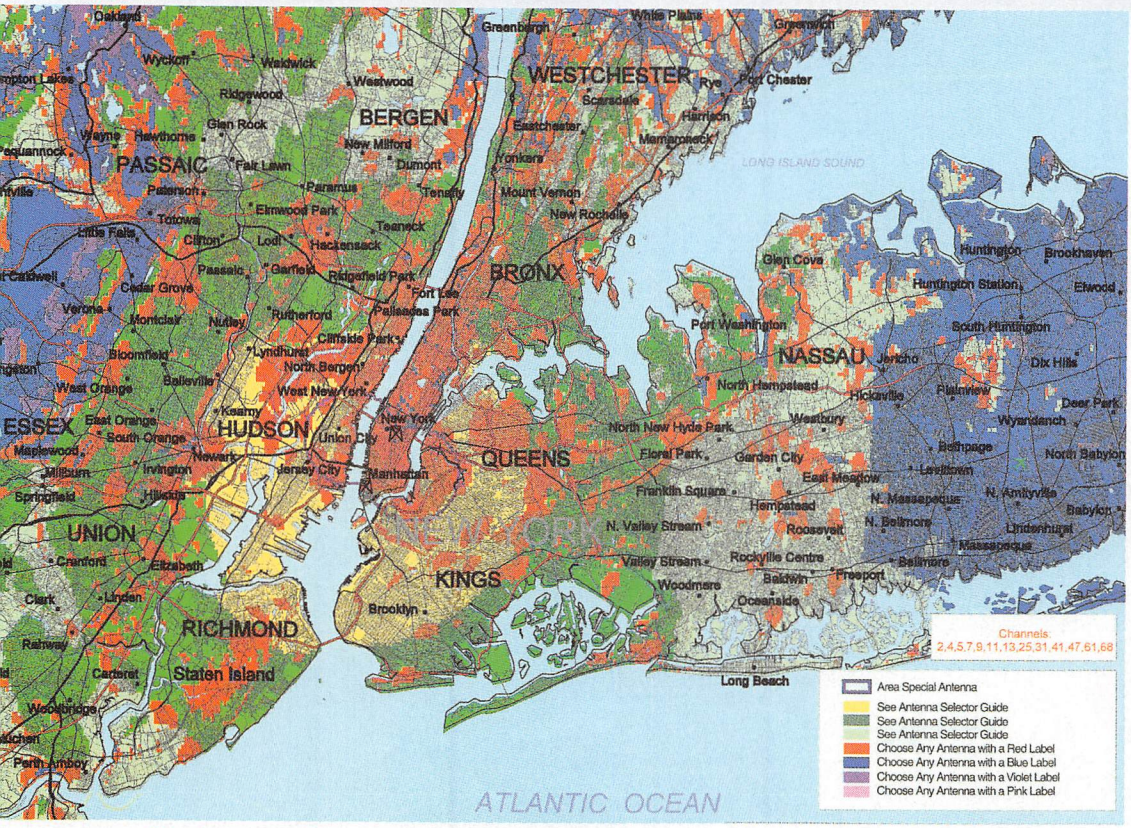
If you're like most ***Sound & Vision*** readers, you probably have no practical experience with TV antennas. And if you do have experience, it's probably from 20 or more years ago. To help you sort through the often confusing claims made by antenna manufacturers while removing any ambiguity about terms like "fringe" or "suburban," the Consumer Electronics Association (CEA) developed the Antenna Selector Map Program. When you walk into an audio/video dealer, you can look at a map of your area with detail down to the street level. Find where you live, match the color on the map at that point with a sticker on an antenna box, and theoretically you'll get good performance as long as you install the antenna correctly.

CEA has a Web site, AntennaWeb.org, that automates the process. Enter your address and indicate whether there are any tall buildings nearby, and you're presented with a list of stations you should be able to receive, again color-coded to match stickers on the antenna boxes. You also get a local map indicating the direction to the transmitting antenna(s), which can help you determine whether you need a directional or rotatable antenna.

While the paper versions of the maps at dealers are limited to a single city, the AntennaWeb site is not. As you can see from the screen capture of the map on the next page, the antenna selector program predicted that I should be able to receive 28 stations, three of them digital, from New York, New Jersey, and Connecticut.

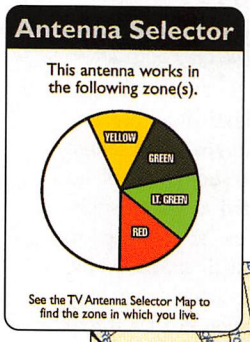
The Antennas

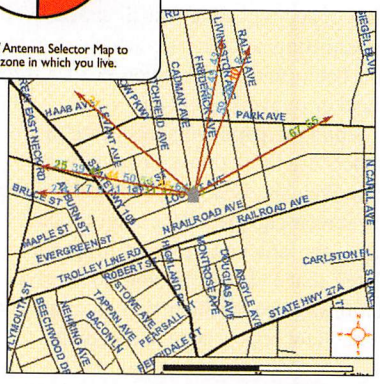
RadioShack's 15-2160 and 15-2162 antennas are both for the UHF band only, and they're technically known as Yagi antennas



The Consumer Electronics Association's Antenna Selector Map Program can help you determine which stations you should be be able to receive at your location using antennas in color-coded categories. Maps are available at audio/video dealers for more than 200 TV market areas. Our test site was in the blue area at the right of the map.

with corner reflectors. The 2160 is small and easy to handle. Its boom — the part clamped to the mast that holds the receiving elements — is just 40 inches long. RadioShack rates its range as 75 miles and calls it a "medium directional" antenna (red) under the CEA program. The boom on the 2162 is 100 inches long. The 2162 is also rated as medium directional, and RadioShack says it has a 120-mile range (given the number of elements, I'd have guessed that it would be classified as a large directional antenna, color-coded violet). I picked two UHF-only antennas to test because virtually all DTV stations will be in the UHF band. Only a relative handful (78 out of more than 1,600) have been assigned to the VHF high band, and only five are on the air yet (including WTNH-DT, Channel 10, which serves the Hartford/New Haven area).





Look for a color-coded Antenna Selector sticker to help choose the right antenna for your location after visiting AntennaWeb.org (small map).

RadioShack's VU-190 is a large combination VHF/UHF antenna with a boom length of 160 inches, or a little more than 13 feet, and a maximum width of about 8 feet. It uses a log-periodic design for the VHF bands and a Yagi design for UHF. Although I was able to test the VU-190 in my attic, it can't really be considered attic-mountable because of its size. Despite its 16-inch length, it, too, is rated as a medium-directional antenna.

Thanks to a perforated machined aluminum reflector/shield and an orange polycarbonate covering over the main helically wound element, the Terk HDTV60 antenna looks like a huge bug zapper. It has a built-in amplifier that can be bypassed if desired. Terk rates the HDTV60 as a medium, multidirectional antenna (dark green) and recommends installing it outdoors, but I tested it in my attic along with the others.

The Proof Is in the Viewing

For the most part, I could predict how any of these antennas would perform with digital signals based on its analog performance. As you'd expect, the RadioShack UHF-only antennas performed poorly on the VHF band and very well on the UHF band, with the 15-2162 noticeably better than the 15-2160, picking up more stations and generally providing stronger signals with less noise. If the digital stations in your area are on the UHF band, either of these antennas should do the trick in suburban areas. Even though the VU-190's UHF section is smaller than the 15-2162's, it was the clear winner for both UHF and VHF.

Terk's HDTV60 didn't do well in my location with analog signals (it's not rated to perform well at long distances), but it did okay with the two New York City digital stations. And the reflector/shield really



The 15-2162 (right) and 15-2160 (below) are two RadioShack antennas designed for the UHF band.

did seem to minimize multipath distortion just as Terk claims. With the other antennas, especially the RadioShack 2160, the Fox network's local digital channel, WNYW-DT, was often subject to image breakup — usually total loss of the signal — due to multipath whenever airplanes passed overhead. The HDTV60 never flinched.

Terk claims that mounting an antenna in the attic causes you to lose about 45% of a signal. While that seems like an exaggeration — especially since my spectrum-analyzer measurements showed virtually no difference — there's no denying that mounting the RadioShack VU-190 on the roof made a dramatic difference in its performance. Mounting it there was the only way, for example, that I could pick up the digital signal from ABC affiliate WTNH in Hartford/New Haven. I'm not sure whether it was the extra height (about 10 feet) or just getting it outdoors that did the trick — probably a combination of the two — but the difference was real.

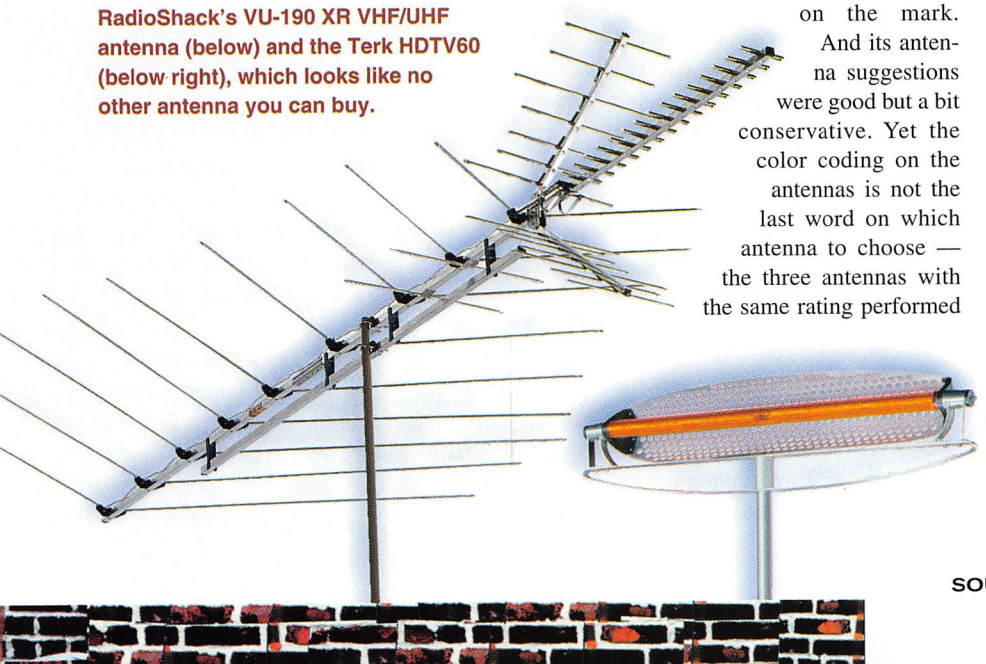
CEA's antenna selector program did a good job of indicating what stations can be received in my area, but its predictions for digital stations were far too optimistic. For example, it suggested that the smallest multidirectional antenna would serve to pull in the Fox and CBS digital stations in New York and that ABC's digital station in Connecticut should be easier to receive than New York's VHF stations — neither of which was the case. For analog signals, it was pretty much right on the mark. And its antenna suggestions were good but a bit conservative. Yet the color coding on the antennas is not the last word on which antenna to choose — the three antennas with the same rating performed quite differently. And I was happy with the red-coded VU-190 even though I live in a "blue" area, which calls for medium directional antennas with a signal preamp. (I'd definitely add a preamp if I hooked any of these up to my home wiring with its countless splitters.)

Channel & Location		Antenna Performance				
		RadioShack 15-2160	RadioShack 15-2162	Terk HDTV60	RadioShack VU-190 XR (in attic)	RadioShack VU-190 XR (on roof)
2	New York City	—	—	1	1	4
4	New York City	—	—	1	4	4
5	New York City	—	1	—	4	5
7	New York City	1	4	4	5	5
8	Hartford/New Haven, CT	–	–	1	1	4
9	New York City	1	3	4	5	5
10-D	Hartford/NewHaven	—	—	—	—	4
11	New York City	1	2	4	5	5
13	Newark, NJ	1	2	3	5	5
17	New York City (low power)	1	2	—	1	3
20	Waterbury, CT	—	—	—	1	4
21	Long Island	5	5	5	5	5
25	New York City	5	5	—	5	5
30	New Britain, CT	—	1	—	3	4
31	New York City	4	5	4	4	5
35	Long Island (low power)	—	—	—	1	3
41	Patterson, NJ	4	5	5	5	5
43	Bridgeport, CT	1	3	—	3	4
44-D	New York City	3	5	4	5	5
47	Linden, NJ	4	5	4	5	5
51	New York City (low power)	—	—	—	2	4
55	Long Island, NY	5	5	5	5	5
56-D	New York City	4	5	5	5	5
59	Hamden, CT	1	3	4	4	5
61	Hartford, CT	—	2	—	2	3
67	Long Island	4	5	4	5	5
68	Newark, NJ	3	4	1	5	5

Depending on the antenna, I could receive as many as 27 stations. Reception quality is rated on a scale of 1 to 5, with 5 being perfect. (A dash indicates that no signal was received.) Where a digital station (D) has a score of less than 5, it indicates occasional loss of the signal. (The cities listed are where the stations are licensed, not necessarily where their antennas are located.)

Although I found it trickier to receive digital signals than to pull in analog signals — antenna pointing was critical, and the DTC100 took several seconds to lock on to a signal or to update its signal-strength indicator — the high-definition digital programs looked fantastic. Unfortunately, the extra picture detail didn't help the plot or the jokes in CBS's *The King of Queens*. Even standard-definition digital programming can look pretty good, however — equivalent to what you're used to seeing from a digital satellite system. So if you think that TV antennas are low-tech and old-tech, think again. Until we have digital cable, they're the key to digital TV. S&V

RadioShack's VU-190 XR VHF/UHF antenna (below) and the Terk HDTV60 (below right), which looks like no other antenna you can buy.





Multimedia Maven

Way cool equipment, software, and Web sites

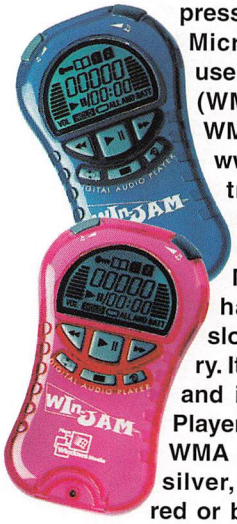
EDITED BY MICHAEL ANTONOFF

streaming-video war



Real Networks (800-444-8011, www.real.com), a pioneer in the field of streaming media, has released Real Entertainment Center (REC), which goes up directly against Microsoft's newest, but less versatile, Windows Media Player. Included in the REC download package is RealPlayer 8, which contains new streaming video technology jointly developed by Real and chip maker Intel. They are claiming it carries "VHS-quality" images at a data rate of 500 kbps and "near-DVD quality" at 1 Mbps, a fraction of the data rate from a real DVD. Of course, to watch such things as a Sinéad O'Connor music video in one of the high-quality modes, you're going to need a broadband connection to the Net like DSL or a cable modem. — *David Ranada*

un-MP3



While most flash-memory music devices use the digital audio compression format known as MP3, Microsoft would prefer you use its Windows Media Audio (WMA) format. To support WMA, I-Jam (847-839-1233; www.ijamworld.com) is introducing the Win-Jam digital music player this summer. Like I-Jam's MP3 player, a Win-Jam has two MultiMediaCard slots but no internal memory. It connects via a USB port and includes Windows Media Player 7 to convert MP3 files to WMA files. Available in black, silver, yellow, and translucent red or blue, a Win-Jam with a 16-MB blank card and an 8-MB card holding prerecorded music costs $130.



move over, iMac

Apple's iMac has turned a lot of heads not only because of its candy-colored cases but also because of its innovative design and extreme user-friendliness. But now the PC world has its own iMac of sorts. Housed in a compact blue case, the Presario EZ2700 desktop PC, $1,374 from Compaq, sports a retro-cool design that suggests a 1950s-era toaster. While it won't brown bread, the EZ2700's abundant features will allow you to cook up a true multimedia feast.

The Compaq PC comes with a 17-inch monitor and external speakers. It features a 550-MHz Pentium III processor, 64 MB of RAM, a 20-gigabyte UltraDMA hard drive, and both front and back IEEE 1394 (FireWire) and USB ports to connect peripheral devices like a digital camcorder or a SmartMedia card reader. A 56-kbps internal modem and both DVD-ROM and CD-RW drives are included. The preinstalled software includes Justburn for recording music mixes onto CD-RWs, RioPort Audio Manager for assembling playlists of MP3 files, and MGI VideoWave III for editing DV-format video footage.

A relatively basic video-editing package, VideoWave III's object-oriented graphic interface will have you up and running quickly. It features a variety of titles and transition effects, filters (including swirl, ripple, and tint) for creating mind-warping psychedelic images, and a darkroom function that lets you adjust a scene's brightness, contrast, and color. There's even a chroma-key function that allows you to superimpose footage from one video clip onto the background of a second clip.

When you've finished editing your movie, you can either transfer it at full resolution back to your digital camcorder, compress it into a download-friendly Windows Media Player file for posting on a Web site, or archive it onto a CD-RW. The EZ2700 PC from Compaq (800-888-0220; www.compaq.com) may not have a clever name or come in tasty colors like lime or tangerine, but it's a low-priced multimedia marvel nonetheless. — *Al Griffin*

a whole lotta shakin'



Ask Americans about music games, and they're likely to cite *Name That Tune*. In Japan and much of Asia, though, music games refer to one of the hottest new trends in entertainment — and American gamers are starting to get the beat as well.

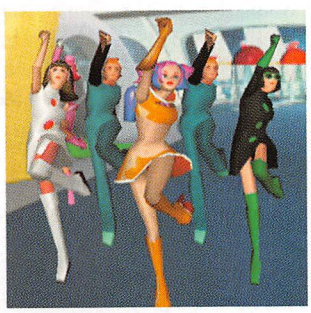
In the late '90s, Konami released an innovative arcade game called *Beatmania* that combined a musical keyboard, turntables, and techno-pop music with fairly basic, Simon-Says game play. Hitting keys that correspond with the symbols at the right time adds harmonious sounds to the music and earns points. Hitting the wrong key or responding at the wrong time costs points and creates noise.

Other games with music themes followed. Konami had another major hit with *Dance Dance Revolution*, in which players mimic the moves of virtual dancers standing on a platform with touch-sensitive tiles. While the company never attempted wide distribution of *Beatmania* in U.S. arcades, it has shipped *Dance Dance Revolution*, and the game has scored decently, especially on the West Coast.

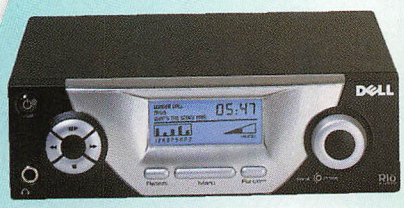
The home version of *Dance Dance Revolution*, which Konami (www.konami.com) released for PlayStation, is a hit with teenagers and housewives in Japan. (According to Konami, housewives have discovered that hopping around on the game's floor pad offers a great aerobic workout.) While the company hasn't yet decided whether it will import *Dance Dance Revolution* into the U.S., others are releasing music games and related programs here.

Codemasters (559-683-4468; www.codemastersusa.com), a company that's better known for sports and racing games, offers *MTV Music Generator* for PlayStation ($40) and Windows ($30). The software enables users to choose from more than 3,000 riffs and combine them to make music.

Sega (800-872-7342; www.sega.com), maker of the Dreamcast game console, is also bringing music to home gaming. In June, Sega released *Space Channel 5* ($40), a science-fiction adventure game in which players help a beautiful heroine save a space station from alien infestation by line dancing with the attackers. The company hopes to score another musical hit for Dreamcast this fall with *Samba de Amigo*, a hilarious game players control using motion-tracking maracas. The price hadn't been set, but a pair of maracas is in the box.



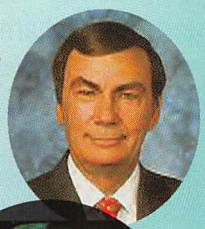
— Steven L. Kent



pc to stereo: listen up!

With home networks becoming more prevalent, Dell Computer (800-999-3355; www.dell.com) was expected to begin selling in August a small (9 x 3 x 8-inch) component that enables music devotees to play PC audio files (MP3 or WMA) in another room. The Dell Digital Audio Receiver, to be priced at $199 with a Dimension PC and $249 by itself, uses existing wired home-networking technology (Ethernet or Home Phoneline Networking Alliance). A PC running Windows 98 or higher is your jukebox. The receiver puts out 10 watts per channel to nonpowered speakers, or it can be used as a source component in a stereo system. There is no digital output or USB ports, and streaming audio from the Internet isn't supported. Song information is shown on a front-panel LCD. A remote control and MusicMatch software are included. The product was co-developed with S3, which makes the Diamond Rio digital music player.

together at last?





You can experience Sam Donaldson doing his thrice-weekly Webcast (www.abcnews.com) with his usual deep intonations (who can forget his *Saturday Night Live*-like delivery of "This is PrimeTime Live!"), or you can watch a much prettier and somewhat more synthetic computer animation named Ananova (www.ananova.com) deliver a daily news capsule in a monotonous British-Swedish lilt. (Each of her two- or three-sentence stories is punctuated by a brassy boom-boom.) These two extremes of video-streamed news available exclusively on the Internet could prompt some Net genius to pair the two in an updated version of Dan and Connie or Harry and Barbara. They could call the show *Ana and the Donaldson*. S&V



MP3 to Go

Faster than you can say, "You can't spell 'freedom to download' without free-load," mobile-sound enthusiasts introduced the MP3 audio format into the car environment. Long before mobile-electronics manufacturers were able to bring car-specific MP3 players to the shelves, eager beavers who weren't willing to wait for them jerry-rigged portable — and in some cases, not-so-portable — MP3 units into their car stereo systems any which way they could.

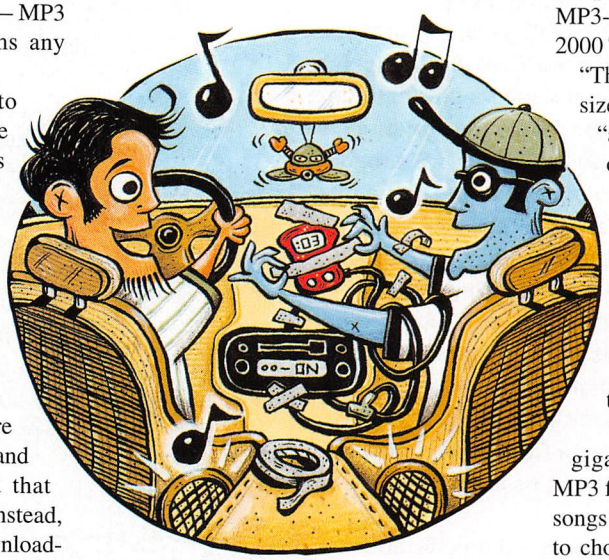
Thing is, many of them had to settle for using dummy-cassette adapters to feed the output signals from MP3 players to their cassette head units or else go with a cassette-shaped MP3 player such as the *très* sleek Rome ($250). But a lot of us don't have cassette players in our cars anymore (if we ever did), and we've bypassed that route entirely. Instead, we've been downloading MP3 files with as much abandon as college kids with unlimited Web access and transferring them to CD-Rs. The catch here is that, until recently, downloaded files had to be burned in standard CD format since most existing CD heads simply can't read MP3. Finally, however, a number of head units that *can* decode discs with MP3 data, such as Aiwa's CDC-MP3 ($300) and Kenwood's eXcelon Z919 ($650), have made it to market, and this feature is likely to become standard on more and more heads in the coming months. And waiting in the wings are more products like Rockford Fosgate's RFXMP3.8 ($250), a diminutive MP3 player that can hold up to eight wafer-thin 8-megabyte (MB) multimedia cards (MMCs), adding up to 64 MB of sonic memory.

Some impatient souls didn't want to wait for car-specific MP3 gear or fiddle with CD-R burning.



How's the sound quality? That depends on whom you ask. To be honest, I've yet to be totally knocked out by the sound quality of MP3 files I've heard while on the road, but audiophiles generally agree that MP3 recordings using data rates of 128 kbps and above are in the right ballpark.

As mentioned earlier, some impatient souls didn't want to wait for car-specific source units *or* fiddle with CD-R burning — folks like Geoff Curtis. Last summer, this 19-year-old college student from Michigan City, Indiana, decided to uproot himself and move to southern California. Instead of lugging along a bevy of binders or towering stacks of CDs for the 2,000-mile car trip, Geoff loaded about a thousand MP3 files on a Samsung hard drive, which he stashed under the front passenger's seat in his 1995 Dodge Stratus. He placed the accompanying bulky power supply — a necessary piece of equipment for converting the car battery's 12 volts DC to the 120 volts AC the hard drive required — under the driver's seat.



Geoff accessed the MP3-filled hard drive by selecting the auxiliary-source setting on his system's JVC ElKameleon KD-LX3 CD head unit. (He was even able to program its display so "MP3 PLAYER" came up whenever the ElKameleon was in this mode.) Individual songs were selected using a 17-digit keypad that he attached to the center console with Velcro.

After an aurally satisfying drive to the West Coast, Geoff quickly found employment at Gold Star Audio in Irvine, California. Installers Jeff Brueggeman and Yan Grendlin were impressed with his MP3 setup, but they did him one better with the MP3-centric install in Brueggeman's own 2000 Toyota Tacoma.

"The motherboard is about a quarter the size of Geoff's," reports Brueggeman, "and it has inputs so that we can add on a DVD source if we want. Track selection is done on the touchpads of a wireless keyboard that's been flush-mounted in the dash. There's also a composite-video input and a VGA output, and the monitor we installed visualizes the spectrum that's playing by way of an emulator program."

Brueggeman's creation boasts a 20-gigabyte hard drive that holds 5,900 MP3 files — yes, you read that right: *5,900* songs! "Instead of having one big category to choose from," Brueggeman adds, "you can hit buttons labeled 1 through 9 and get [genres] like rap, techno, and New Age. It's a lot easier to use."

It's a lot more compact and efficient than Geoff Curtis's concoction, too. "Everything fits into one case that's smaller than a lunchpail — it's 6 inches wide, 5 inches long, and 2 inches high," notes Brueggeman. "There's no need for a power converter or an external power supply, either. It's all 12-volt and runs off the Tacoma's stock cassette/CD head through an FM modulator. Soon, though, I'm gonna swap it out for the Kenwood Z919." And who could blame him? The MP3 movement never stands still. S&V

Mike Mettler *is editor in chief of* Car Stereo Review's Mobile Entertainment™, *a new bimonthly publication devoted to all things related to Technology in Motion*™. Mobile Entertainment*'s debut issue hits newsstands September 26.*

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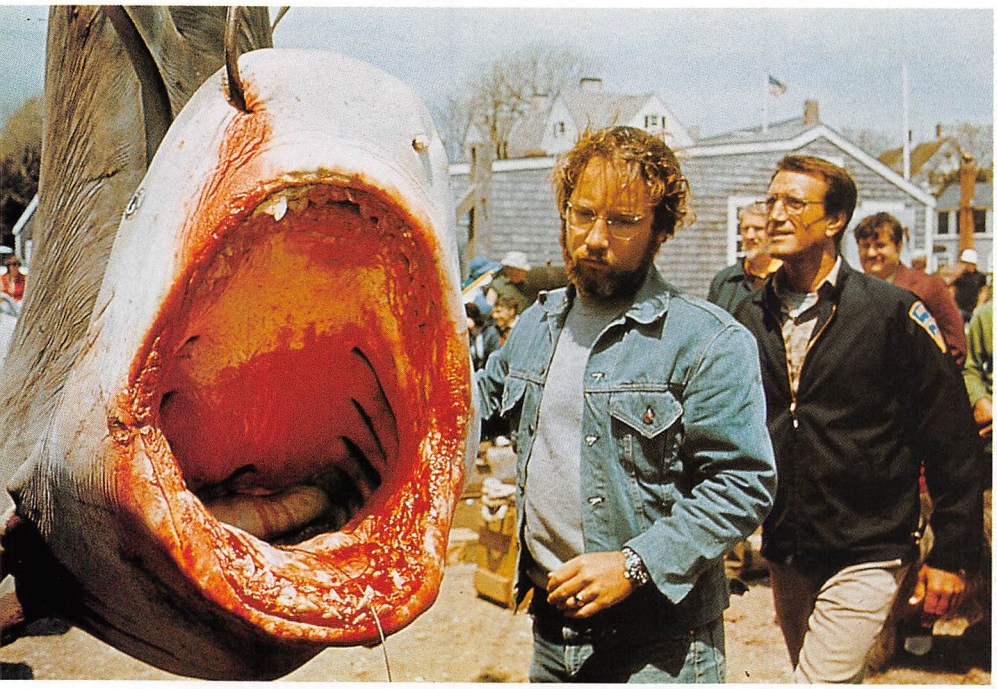
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entertainment

movies



JAWS
Universal ★★★★

The first movie to make $100 million, *Jaws* (1975) ushered in the era of the blockbuster. It changed forever the ways in which big-budget movies are financed, produced, and distributed, and everything from *Star Wars* to *The Perfect Storm* has only followed in the big fish's wake. But the biz of *Jaws* can make it easy to forget the movie's real triumph: Steven Spielberg's second theatrical feature remains a masterpiece of visual storytelling. Just ask America's film-school professors, many of whom now teach *Jaws* right alongside *Grand Illusion* and *Citizen Kane*.

Spielberg's images deserve the best frame possible, and Universal's 25th-anniversary disc doesn't fall short. Resolution and color rank next to that of the best DVD transfers on the market while far surpassing my beloved laserdisc editions. The blue-gray skies of New England are perfectly realized. Fortunately, the mechanical shark passes the high-res DVD test; it's still a fantastic illusion with no visible seams. In fact, the extra depth and detail make the monster seem scarier than ever. The original mono soundtrack has been remixed in Dolby Digital 5.1 for the first time, but the difference is more subtle than you might expect. There's only so much that can be done without rerecording the entire film.

The disc's special features are a mixed bag. A 1995 documentary is full of interesting tales, such as Spielberg admitting that when composer John Williams first played the simple *Jaws* theme — the two-note figure that will forever say "Shark!" to viewers everywhere — the director actually thought Williams was making a joke. Deleted scenes and outtakes are a little thin. More disappointing is the overall programming of the supplements. Storyboards and production photos are presented at a very slow pace, with forward scanning blocked, and the hour-long documentary provides no chapter stops. Still, none of this should keep anyone from buying an otherwise wonderful DVD. **English, Dolby Digital 5.1; letterboxed (2.35:1) and anamorphic widescreen; dual layer.** *Ken Korman*

FIGHT CLUB
20th Century Fox ★★★★

The idea that guys should get beaten bloody in order to liberate themselves from fear of pain and humiliation — the first step toward becoming an army of uncompromising überdudes — may seem like juvenile nonsense. It is, but *Fight Club* isn't promoting this philosophy, just getting into the head of someone who would. The crazed subjectivity can be tiringly busy at times, but it also allows for considerable inventiveness and brilliant, unpredictable expansions of plot.

Like his *Se7en* and *Alien*^{3}, director David Fincher's *Fight Club* is horribly gloomy and appears to have been immersed in urine. Nonetheless, it's cinematically striking, and the THX-approved DVD transfer is very crisp, with good contrast and detail even in the plentiful shadows. The 6.1-channel Surround EX sound is pounding but sharp and very enveloping, with knock-you-around-the-head surround effects used as aggressively as the camerawork and computer-generated visuals. (For more on *Fight Club*'s soundtrack, see "Eye on EX," page 121.)

Since the film depicts individuals battling consumerist selves, it's ironic that the DVD is a beautifully packaged piece of merchandise with *four* commentaries and a second disc of extras. The highlight section allows you to view Fincher blocking scenes, the crew shooting them, or a split screen of both. You also get demonstrations of special effects, comparisons of scenes with alternative edits, and a making-of documentary. One unexpected bonus is the THX Optimode feature for calibrating your audio and video equipment. Another is Brad Pitt's music video. **English, Dolby Digital Surround EX and Dolby Surround; French, Dolby Surround; letterboxed (2.35:1) and anamorphic widescreen; two dual-layer discs.** *Josef Krebs*

THE GREEN MILE
Warner ★★★

Frank Darabont, director of *The Shawshank Redemption*, scores again with another prison film based on a Stephen King novel. This time there's an element of fantasy in the form of a death-row prisoner who has supernatural healing powers. Although the narrative is initially slow and then overly long, the characterizations and award-caliber performances by Tom Hanks, Michael Clarke Duncan, and James Cromwell (not to mention Mr. Jingles, the mouse) make *The Green Mile* a must-see. Unwary viewers should be cautioned, however, that the 1930s electric-chair execution scenes are realistic and brutal.

Warner's state-of-the-art transfer makes watching this DVD a near-theatrical experience. Images are sharp, and even the numerous dark scenes are rich in detail and nuance. The Dolby Digital 5.1 mix helps create atmosphere and spatial realism, although a few passages of center dialogue could be clearer. Extras consist of a making-of documentary

STAR SYSTEM	
Stellar	★★★★★
Excellent	★★★★
Good	★★★
Fair	★★
Poor	★

with more promotional fluff than useful information and a biography section that lists 15 cast and crew members but supplies background on only four. **English, Dolby Digital 5.1; letterboxed (1.85:1) and anamorphic widescreen; dual layer.** *Rad Bennett*

SLEEPY HOLLOW

Paramount ★★★

If only director Tim Burton were as gifted a storyteller as he is a visual artist. *Sleepy Hollow*'s lush Gothic images are some of the most beautiful and haunting ones ever created for a film, but the tale here, based on Washington Irving's *The Legend of Sleepy Hollow*, arrives in fits and starts and ultimately generates little suspense. Johnny Depp stars as Ichabod Crane, a constable in New York City circa 1799 who's sent upstate to investigate a series of grisly decapitations at the hands of a supposedly headless horseman. As is so often the case with Burton's films (*Ed Wood*, *Edward Scissorhands*), *Sleepy Hollow* benefits from a fine ensemble cast, including Christina Ricci, Miranda Richardson, and Christopher Walken.

The DVD transfer itself is a smashing success, with almost enough depth, detail, and aural oomph to make me forget the film's wonderfully immersive presentation in theaters. Throw in a director's commentary, a photo gallery, trailers, and a brief making-of documentary and you've got a flawed but enjoyable movie that represents itself very well on DVD. **English, Dolby Digital 5.1 and Dolby Surround; French, Dolby Surround; letterboxed (1.85:1) and anamorphic widescreen; dual layer.** *Ken Korman*



Dead wood: Johnny Depp keeps his head in *Sleepy Hollow*

TIP SHEET

Coming Releases



JURASSIC PARK; THE LOST WORLD

Take your pick: (1) separate special editions (in Dolby Digital or DTS) with plentiful extras; (2) a two-film special-edition collection that includes the extras plus extra extras; (3) a two-film special-edition *limited* collection that includes the extras, the extra extras, and the two films' soundtrack CDs, plus extra extra extras. **Universal, Oct.**

STRANGER THAN PARADISE

At the opposite end of Eden, Jim Jarmusch's shoe-string masterpiece about . . . whatever . . . puts aside plot and production values to . . . you know . . . hang. **MGM, Sept.**

GIRL, INTERRUPTED

Columbia TriStar ★★★

Based on Susanna Kaysen's book about her two years in an upscale psychiatric hospital, *Girl, Interrupted* is a thoughtful and moving film. At times, though, it can be a ponderous one that you'll appreciate more for its moments. Once Angelina Jolie appears, in an Oscar-winning performance so charismatic that it eclipses everything else, the plot balance is knocked askew and is never quite righted again. The most memorable scene, however, involves a confrontation between Susanna (Winona Ryder) and the head shrink (Vanessa Redgrave) where the actresses bring out the best in each other.

The DVD transfer is about the norm for Columbia TriStar these days, which is to say that it's state of the art. Ryder wears lots of stripes and prints, but there's absolutely no shimmer, and the atmospheric visuals (rain on a windshield, bare branches against the sky) are impressive in their intricate detail. The sound mix is subtle though complex, aiding the transitions in and out of flashbacks. Extras include a director's commentary, deleted scenes, a making-of documentary, an isolated score, and biographies of the headliners. **English, Dolby Digital 5.1 and Dolby Surround; letterboxed (1.85:1) and anamorphic widescreen; dual layer.** *Rad Bennett*

BEING JOHN MALKOVICH

USA ★★★★

This immensely original directorial debut by music-video auteur Spike Jonze is one of the wildest movie rides in years. The setup is that a mysterious portal in a bizarre office building leads you directly into the mind and body of John Malkovich — but only for 15 minutes; after that, you're ejected onto the New Jersey Turnpike. Impressively, Charlie Kaufman's script keeps upping the ante from there, offering some hilarious characters amidst a deeply strange meditation on celebrity, sexual identity, and plenty more. It must be said, though, that the cream of the jest may actually be Malkovich himself; he's a virtual living sight gag, such a unique mix of effeteness and feral macho aggression that the whole thing becomes unthinkable if based on any other actor (although, personally, I'd rather like to see *Being Ernest Borgnine*).

Picture and sound quality on this DVD transfer are superb, but don't expect much surround-channel action apart from that of the rushing-through-the-Malkovich-portal scenes. Supplementary materials include an interesting interview with Jonze, an album of production photos, and (my favorite) a warning not to click on a certain icon. **English, Dolby Digital 5.1 and Dolby Surround; letterboxed (1.85:1) and anamorphic widescreen; dual layer.** *Steve Simels*

THE JAMES BOND COLLECTION, VOL. 2

MGM ★★★

This second five-disc boxed set of 007 adventures, a Bondwagon running through two decades, is a slight comedown from the excellent first helping. Highlights are the initial installment, *Dr. No* (1962), and the underrated *On Her Majesty's Secret Service* (1969). They're joined by *The Man with the Golden Gun* (1974), *The Spy Who Loved Me* (1977), and *Moonraker* (1979). Overall, though, the set's pros outweigh its cons.

Golden Gun appears in the proper aspect ratio and in Dolby Surround. And each disc includes supplemental rarities — outtakes, behind-the-scenes footage, radio spots, exhaustive documentaries and commentaries — which themselves justify the price of the set. The often scholarly yet always entertaining anecdotes from cast and crew reveal the painstaking labors necessary to pull off the stunts, special effects, gadgets, and other requisite wizardry. There are segments on art di-

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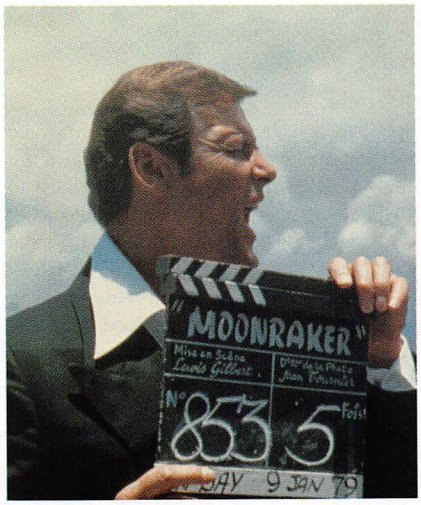
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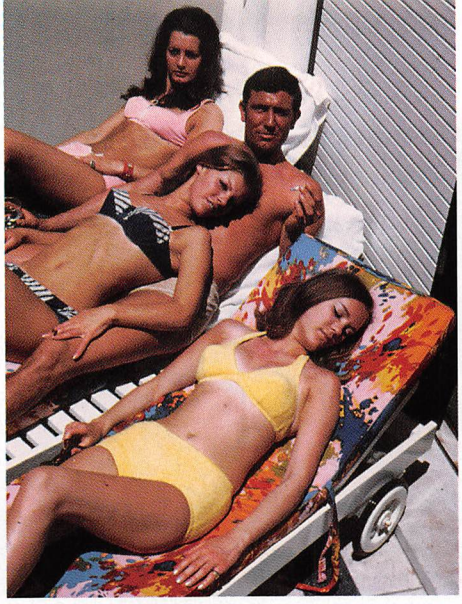
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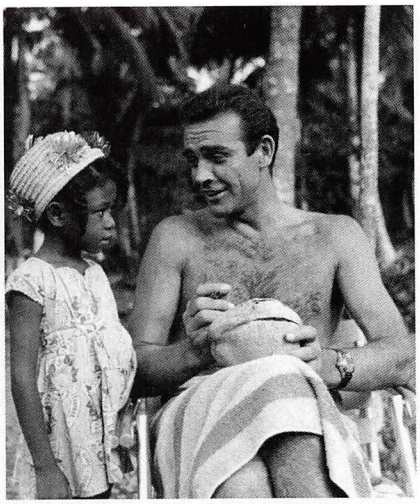


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License to chill: Roger Moore, George Lazenby, Sean Connery, and friends take five in *The James Bond Collection, Vol. 2*

rection, set design, casting, mishaps, and Bond girls, as well as a deserved tribute to the late Desmond Llewelyn (whose character, Q, would no doubt heartily approve of the high-tech A/V fun of each selection's interactive menus). Besides giving information on each movie, these extras provide a valuable insight into big-budget filmmaking of the 1960s and '70s. Frequently, they also reveal fascinating tidbits, such as that Stanley Kubrick worked on *Moonraker* under the strict proviso that he not be credited.

The transfers themselves are exquisite, with *Dr. No*, *Spy*, and *Moonraker* showing a marginal improvement over their fine-quality DVD debuts of a couple of years ago. Whether you choose to buy this mini-library in toto or in part, you can be sure that James Bond will be back in Volume 3. **All: anamorphic widescreen; dual layer. *Dr. No*: English, Dolby Digital 2-channel mono; French and Spanish, Dolby Digital mono; letterboxed (1.78:1). *O.H.M.S.S.*: English and Spanish, Dolby Digital 2-channel mono; letterboxed (2.35:1). *Golden Gun*: English, Dolby Surround; letterboxed (1.85:1). *Spy*: English, Dolby Digital 5.1; French, Dolby Digital 2-channel mono; letterboxed (2.35:1). *Moonraker*: English, Dolby Digital 5.1; English and French, Dolby Surround; letterboxed (2.35:1).** *Mel Neuhaus*

REFERENCE DVD

THE WORLD IS NOT ENOUGH

MGM ★★★½

In 007 No. 19, director Michael Apted handles the James Bond franchise with agreeable results. He certainly has a feel for the genre in his execution of the movie's elaborate set pieces, which include a ski chase, complete with parachuting snowmobiles, and an assault on a caviar factory by helicopters dangling massive circular saws. The vivid images of destruction are accompanied by skillful acting, with Pierce Brosnan making 007's skin his own and Sophie Marceau and Denise Richards becoming enthusiastic Bond babes. Only Robert Carlyle (*Trainspotting*), as anarcho-terrorist Renard, fails to put life in his role.



MGM's anamorphic widescreen transfer is superb in all respects. Almost every scene has punchy contrast and color, and the fleshtones look consistently accurate. The Dolby Digital Surround EX-encoded soundtrack makes active use of the rear channels, but it does so without drowning you in a sea of gratuitous effects. For the most part, the mix enhances the on-screen action, with water spraying to the sides of the room as a speedboat whips by or helicopter blades chopping above your head as airborne villains pursue 007. The disc has two commentaries, a making-of documentary, multiple-angle storyboard/movie comparisons, and a video of the Garbage theme song. (For more on *The World Is Not Enough*'s soundtrack, see "Eye on EX," page 121.) **English, Dolby Digital Surround EX; letterboxed (2.35:1) and anamorphic widescreen; dual layer.** *Al Griffin*

MAN ON THE MOON

Universal ★★★½

Director Milos Forman has made some strangely beautiful films about some strangely beautiful maniacs: *One Flew Over the Cuckoo's Nest*, *Amadeus*, *The People vs. Larry Flynt*, and now *Man on the Moon*. Although some considered Andy Kaufman an exhibitionist hack, in Forman and Jim Carrey's hands he's revealed as a schizophrenic, scarred, and doomed visionary. Like all great directors, Forman has a wonderful instinct for actors, and Carrey channels Kaufman with ferocity, while the underrated Paul Giamatti is pitch-perfect as his longtime collaborator.

The DVD transfer is a little disappointing. Images are clean enough and pretty much artifact-free, but they're occasionally bland and washed out, particularly in the nightclub scenes, where the theatrical presentation had plenty of sparkle. And the 5.1-channel soundtrack, though technically fine, doesn't get much of a workout. I would have loved to hear more ambience from the audiences in the club and TV-studio scenes. Extras include a making-of documentary, deleted scenes, and two R.E.M. music videos. Best is the inclusion of several live Kaufman performances; toggle back and forth and see for yourself just how eerily accurate Carrey's portrayal is. **English, Dolby Digital 5.1 and DTS 5.1; French, Dolby Surround; letterboxed (2.35:1) and anamorphic widescreen; dual layer.** *Marc Horowitz*

THE X FILES: SEASON 1

20th Century Fox ★★★

If you're enough of a fan of *The X Files* to consider investing $150 and a quantity of your life in this boxed set, then you've probably seen not only all 24 first-season episodes, included here on six discs, but also the related extras that make up the seventh disc. By now, though, you must be used to that feeling of déjà vu. Many of the plots recall old horror movies and sci-fi TV shows, but that may be a clue to the popularity of the series. (The French language tracks and German, Italian,

QUICK FIXES

B. MONKEY

Miramax ★★

B. Monkey is a slick, stylish, and ultimately implausible erotic thriller from Michael Radford (*Il Postino*) with a neat performance by Jared Harris as a jazz-loving schoolteacher who falls for an exotic female thief. The plot makes little sense, but the film is definitely worth seeing for Asia Argento, the smoky-voiced daughter of cult horror director Dario Argento; if you can take your eyes off her, you're probably asexual. The letterboxed transfer and 5.1 mix are first-rate, but the disc lacks extras. **English, Dolby Digital 5.1; letterboxed (1.85:1) and anamorphic widescreen; single layer.** *Steve Simels*



***B. Monkey*'s Rupert Everett, Argento**

IL POSTINO

Miramax ★★★½

A nearly perfect little movie, Michael Radford's 1995 charmer tells the story of a woebegone postman inspired to achieve love and manhood under the unwilling tutelage of the exiled poet Pablo Neruda. The DVD transfer gets the lighting and colors just right, with a surround mix that does the job without calling attention to itself. The disc includes a director's commentary and two featurettes on Neruda and his work. **Italian, Dolby Surround; French, Dolby Digital 2-channel mono; letterboxed (1.66:1); dual layer.** *Sol Louis Siegel*

MARNIE

Universal ★★★

Alfred Hitchcock's *Marnie* (1964) gets better every time I see it, and this DVD's fine video and audio transfers only add to its enjoyment. Extras include an hour-long documentary, still frames, and one of those droll, inimitable Hitchcock trailers in which he takes the audience on a tour of his new movie. **English and French, Dolby Digital 2-channel mono; letterboxed (1.85:1) and anamorphic widescreen; dual layer.** *Rad Bennett*

BLUE VELVET

MGM ★★★½

From the sun-drenched images of director David Lynch's (ostensibly) idyllic suburbia to the hidden, drug-fueled mayhem that goes on after dark, *Blue Velvet* (1986) is all about the visuals. So it's no surprise that Lynch's perverse masterpiece seems more lurid than ever in this richly textured DVD transfer. Decades from now, viewers will still marvel at Dennis Hopper's deeply disturbing performance. **English and French, Dolby Digital Stereo; letterboxed (2.35:1) and anamorphic widescreen; single layer.** *Ken Korman*

PEE-WEE'S BIG ADVENTURE

Warner ★★★★

Pee-wee's Big Adventure (1985) still exudes an almost otherwordly charm owing to the perfect match between Paul Reubens and first-time director Tim Burton. The DVD, with a new widescreen transfer and sound remastered in 5.1, is far superior to all previous releases, and extras include a commentary by Burton and Reubens, deleted scenes, and a music-only track with commentary by composer Danny Elfman. **English, Dolby Digital 5.1; French, Dolby Digital mono; letterboxed (1.85:1) and anamorphic widescreen; dual layer.** *Ken Korman*

LITTLE WOMEN

Columbia TriStar ★★★½

Gillian Armstrong's 1994 adaptation of the Louisa May Alcott classic is visually glowing and blessed with a dream cast. The Collector's Edition DVD boasts a beautiful transfer, a director's commentary, deleted scenes with commentary, a making-of documentary, an isolated music score, and costume and set galleries with commentary. **English, Dolby Digital 5.1 and Dolby Surround; Spanish, Dolby Surround; Portuguese, Dolby Digital 5.1; letterboxed (1.85:1) and anamorphic widescreen; dual layer.** *Sol Louis Siegel*

BUTCH CASSIDY AND THE SUNDANCE KID

20th Century Fox ★★★★

It's been 31 years since Butch and Sundance went down in a hail of bullets in that Bolivian town, but the charismatic pair still have plenty of life in this excellent special-edition DVD. It includes a robust THX-approved anamorphic transfer, a 45-minute documentary, cast interviews, and a director-and-crew commentary. **English and French, Dolby Digital 2-channel mono; letterboxed (2.35:1) and anamorphic widescreen; dual layer.** *Marc Horowitz*

PERFECT BLUE

Manga ★★

This so-so psychosexual thriller (about a young soap star who's getting the *Gaslight* treatment) would be a fairly conventional live-action movie, but it makes for novel *anime*. The letterboxed transfer and 5.1 sound are first-rate, and extras include interviews, a videotaped studio session, and a bonus song. **English, Dolby Digital 5.1 and Dolby Surround; Japanese, Dolby Digital 5.1; letterboxed (1.85:1); dual layer.** *Steve Simels*

Spanish, and Japanese TV clips of some episodes included are evidence that we are not alone.) Perhaps what draws us most to this TV mountaintop is the close encounter not with aliens but with the familiar. Isn't that what gives Mulder and Scully, a latter-day Steed and Mrs. Peel, the ability (like the alien worms in the episode "Ice") to work their way under your skin and make a permanent home?

Visually, the series tends to alternate naturalistic photography of investigations with striking images of weird goings-on. The DVD transfers generally lack depth and detail, probably because little more than available light was used for the original filming — except for those dramatically lit scenes of strangeness, where contrast is cranked, color rich, and detail improved. The surround sound mixes are more impressive, with crisp voices and atmospheric music and effects that draw you into the mysteries.

Besides the opportunity to hear Scully sounding sexy in French and Mulder sounding awake, almost alert, in Japanese, the set offers special-effects info, a mini-documentary, series creator Chris Carter commenting on 12 episodes, two short deleted clips, a PC game, and a listing of episodes from the first six seasons. **English and French, Dolby Surround; full frame (1.33:1); dual layer.** *Josef Krebs*

JEAN COCTEAU'S ORPHIC TRILOGY

Criterion Collection/ Home Vision ★★★★

With this series of films, Jean Cocteau reinvented the myth of Orpheus to examine the process of creativity and the shaping of an artist. *The Blood of a Poet* (1930), although reminiscent of *Un Chien Andalou*, is more visual poem than surrealist dreamscape, and it's a perfect merging of Cocteau's ideas from his sculpture, theater, novels, verse, and painting. *Orpheus* (1949), a more traditional narrative, is an ingenious updating of the ancient-Greek myth to the 1940s Parisian existentialist café scene. *Testament of Orpheus* (1959), less a work of art than a filmic reverie, also has its moments. In all three, Cocteau achieves astonishing and moving moments using the simplest cinematic magic.

The deterioration of the *Blood* print over 70 years was so great that Criterion was forced to to leave the picture immersed in all its scratches, nicks, and flutter. In this instance, though, the artifacts only add to the film's otherworldliness and timeless atmosphere. *Orpheus*, on the other hand, with its ultra-modernist tone, cries out to be crisp, detailed, and free of all marks and shimmer. Criterion's completely digitally restored transfer delivers, with rich blacks, bright whites, and manifold grays giving a beautifully textured and lumi-



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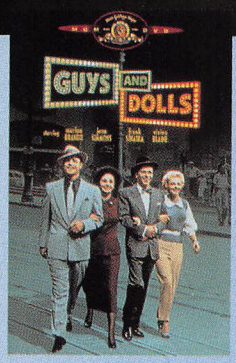
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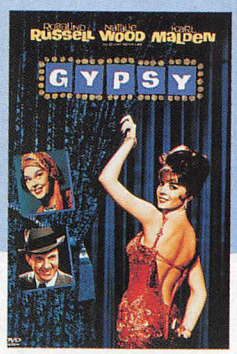


Two song-and-dance classics, a 1960s box-office hit, and a campy '80s favorite make up Warner's nod to the musical on DVD. **Anchors Aweigh** (1945 ★★★½), with Gene Kelly and Frank Sinatra as girl-crazy gobs on the loose in Hollywood, remains a rollicking example of the studio system at its peak. The picture oozes with sun-kissed Technicolor visuals, faithfully rendered in this sharp new transfer. Extras include an interview with William Hanna and Joseph Barbera (who helped create the groundbreaking live-action-and-animated dance sequence between Kelly and Jerry Mouse) and an excerpt from *MGM: When the Lion Roars*.

On the Town (1949 ★★★½), the landmark adaptation of the Broadway sensation, has Kelly and Sinatra again as female-hunting sailors (with Jules Munshin thrown in for shtick), this time in postwar New York, and it makes marvelous use of many actual locations instead of studio-built mockups. Unfortunately, the Technicolor here doesn't equal the bright proceedings. While certainly acceptable, it pales by comparison with that of *Anchors Aweigh*, occasionally exhibiting a bit more magenta than was probably intended.

Gypsy (1962 ★★★), splendidly shot in Technicolor and Technirama (the best of all the anamorphic processes), looks as good as (if not better than) it did at its premiere 38 years ago. While overlong, this saga of stripper Gypsy Rose Lee bumps and grinds on the sheer exuberance of Stephen Sondheim's lyrics and Jule Styne's music. Complementing the beautiful look of the transfer is the Dolby Digital 5.1 remix of the stereo soundtrack, with effects so realistic you can practically feel those garter belts whizzing by your face. Supplementary material, comprising excised numbers (including, surprisingly, the hit "Together Wherever We Go"), only serves to sweeten the pot.

Little Shop of Horrors (1986 ★★★½) blossoms on DVD, for the first time ever in widescreen and Dolby Digital 5.1. Extras include an amusing director's commentary and a funny outtake-and-gag reel.



MGM

In this batch of DVDs from MGM — which virtually defined the term *movie musical* — only one was actually made by the studio (the rest being United Artists productions). Not surprisingly, it's the best of the bunch: **Guys and Dolls** (1955 ★★★★), a lavish Samuel Goldwyn production directed by Joseph L. Mankiewicz and featuring Frank Sinatra, an amazing singing and dancing Marlon Brando, and a rogues gallery of character actors seemingly born to play the denizens of author Damon Runyon's Broadway. Frank Loesser's grand music never sounded better than in the new Dolby Digital 5.1 remix of the 1950s stereo tracks. The enormous, CinemaScoped Times Square sets, shot in garish Eastmancolor by Harry Stradling, never looked more magnificent. Images of crowds are so sharp you can count every pinstripe.



The genius of Loesser shines again in **How to Succeed in Business Without Really Trying** (1967 ★★★½), a sardonic, on-target swipe at corporate shenanigans. The showstopping numbers, however, almost take a back seat to this new Panavision transfer, which vividly accents the striking brilliance of the colorful, fab 1960s set design and art direction.

A Funny Thing Happened on the Way to the Forum (1966 ★★★), showcasing the considerable abilities of composer/songwriter Stephen Sondheim, turns ancient Rome into a bawdy burlesque romp. Risqué tunes and one-liners are delivered with proper aplomb by Zero Mostel, Phil Silvers, Jack Gilford, and Buster Keaton. The fresh widescreen transfer, with the music portions in Dolby Surround, beams with the striking hues of cinematographer Nicolas Roeg's extraordinary palette.

Finally, I give you **Showgirls** (1995 ★★), the Antichrist of musicals. This gorgeous DVD transfer helps the film rise above the rotten acting and writing, revealing director Paul Verhoeven's panache for the genre through a glittery Vegas redo of *42nd Street* and taking full advantage of Dolby Digital 5.1's three-dimensional sonics (do a side-by-side with Pro Logic to sample the astounding difference). *Mel Neuhaus*

nous look to Cocteau's images. *Testament*'s picture is in good shape, with generally clean images. For all three films, the digitally restored sound is clear, with only minor hiss and minimal distortion during some musical passages, probably left over from the original recordings of Georges Auric's whimsical scores.

The *Blood* DVD includes photos, a transcript of a Cocteau lecture, and a 66-minute 1984 documentary on his work. *Orpheus* has an essay by Cocteau. And *Testament* offers a collection of his writings on the film as well as a 16mm short he shot to explain the classical-themed murals with which he completely covered a friend's villa. Fortunate friend. **All: French, Dolby Digital mono; full frame (1.33:1). *Blood* and *Orpheus*: single layer. *Testament*: dual layer.** *Josef Krebs*

THE GREAT DICTATOR
Image/CBS/Fox ★★★★

LIMELIGHT
Image/CBS/Fox ★★★

These two features from the late stages of Charlie Chaplin's illustrious career may not shine like the director's early work, but each carries enough entertainment value — and historical significance — to attract larger-than-cult audiences. *The Great Dictator* (1940) was his first talkie (after he had resisted sound for a decade), and Chaplin rose to the occasion by playing both a thinly veiled caricature of Adolf Hitler and a Jewish barber who bears an uncanny resemblance to the Führer. This, of course, sets the stage for a case of mistaken identity in a sharp, sometimes unforgettable socio-political satire. Also featured are a few purely comedic scenes (the barbershop and the upside-down airplane) that rank with the master's best.

Made in 1952, *Limelight* was Chaplin's last American film, and it may be his most melancholy and sentimental work. In a story plainly filled with autobiographical elements, he plays an aging, alcoholic vaudevillian whose career is on the skids. But he delivers a typically uplifting message by focusing on the comedian's nurturing relationship with an ailing ballerina. In a closing sequence, Chaplin performs a routine with fellow silent-movie legend Buster Keaton, the only time the two ever appeared together on film.

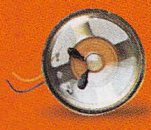
Both movies look their all-time video best on DVD, although each makes use of a film restoration completed in 1993 (and released then on laserdisc). Occasional graininess may inspire yet another state-of-the-art restoration sometime in the future. Extras include a few unreleased scenes, Chaplin's handwritten story notes, production records, and a 1933 newsreel about Hitler. **Both: English, Dolby Digital mono; full frame (1.33:1); dual layer.**

Ken Korman



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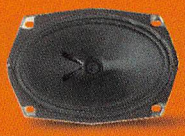
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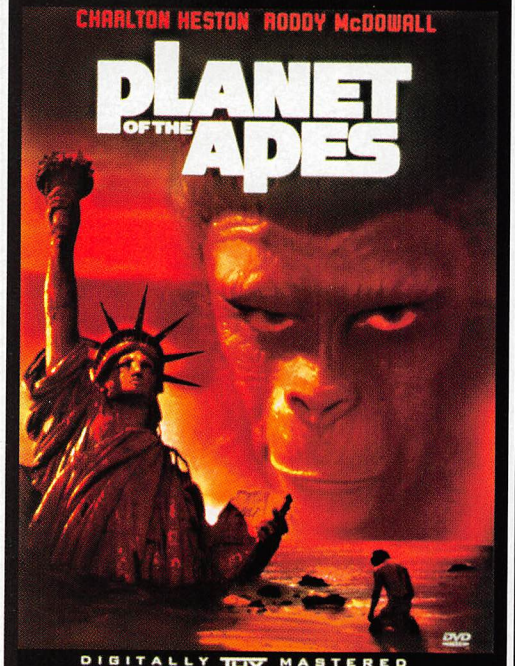
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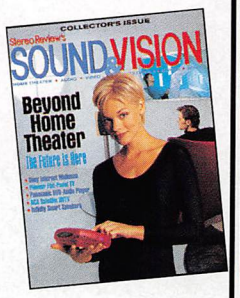
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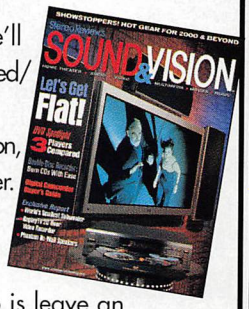


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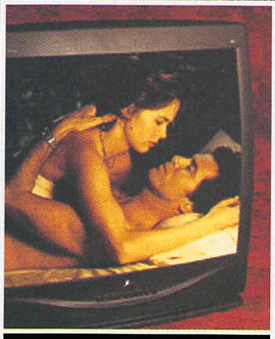
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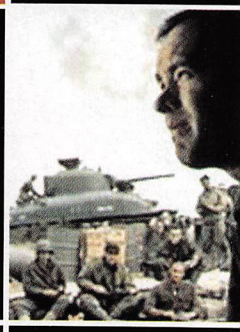
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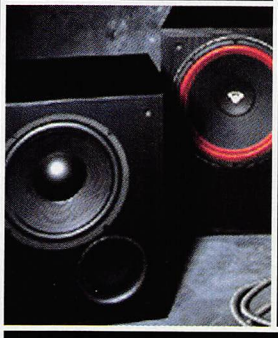




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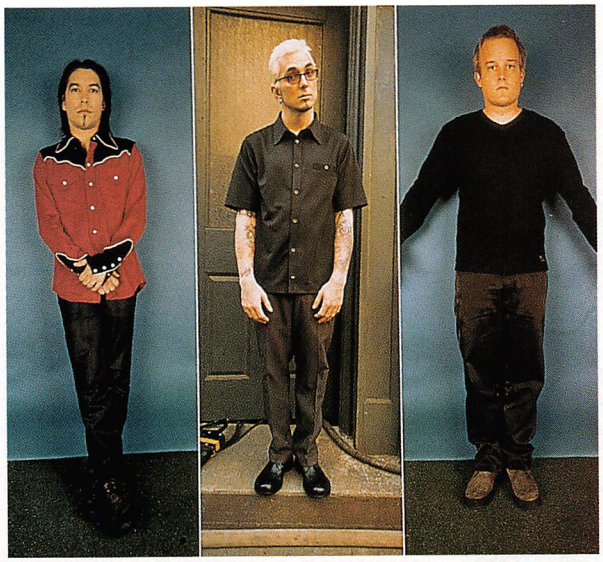
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music



EVERCLEAR Songs from an American Movie, Vol. 1: Learning How to Smile

Capitol ★★★★

Art Alexakis has made a movie about his life, but you can't see it at the local multiplex. This disc — a pop album to be followed by a harder, noisier companion later this year — is both soundtrack and film rolled into one. And since Alexakis is unstintingly honest and capable of everything from the sweetest melodies to the sourest tantrums, *Learning How to Smile* is well worth the price of admission.

No doubt because of the confessional nature of the material, the Everclear frontman originally thought of this as a solo disc. It's probably wise in the end that he included his two bandmates; the unbridled passions of these dozen songs benefit from a widescreen treatment. As a result, the album isn't a solipsistic rant but the forthright story of an American kid. His various passages — childhood wonder, parents' divorce, childhood trauma, drugs, music, and marriage, which starts the cycle of birth, wonder, divorce, and trauma all over again in the next generation — are recognizable in their general unfolding, if not in their particulars.

And make no mistake, there are particulars. Alexakis makes you feel what it was like growing up in the 1970s while grooving to "AM Radio." Using Jean Knight's "Mr. Big Stuff" as a kind of chassis for his hip-hop-style remembrances of things past, he mentions everything from bell bottoms to 8-tracks while cruising in his sister's Ford Pinto en route to the line that sums up the whole gloriously trashy experience: "I can still hear mama say . . . 'Boy, turn that radio down!' " Then comes a version of Van Morrison's "Brown Eyed Girl" that is a true interpretation (as opposed to a mere cover), evoking a powerful nostalgia for lost innocence triggered by Alexakis musing, "I hear a song, makes me think of a girl I used to know / I sing along when I hear it on the radio now."

The flipside to these recollections is the nasty business of conflict and separation, told in documentary candor in "Thrift Store Chair" and "Wonderful." The latter is a poignant song that addresses the toll exacted by divorce from a child's perspective ("I close my eyes when it gets too sad") and its bitter aftermath ("I don't want to hear you say that I will understand someday"). Alexakis delivers his most artful punch in "Otis Redding." Beneath the umbrella of yet another pop-culture reference, this amazing piece brings together all the good and bad memories and complex issues in one bold bundle, ending with a heartfelt personal plaint as the music swirls: "I don't want to be wasted / I don't want to live inside this daydream anymore / I just want to be happy again."

Be forewarned: *Learning How to Smile* is an emotional roller coaster, albeit an inspired one that will variously leave you amused, saddened, and exhilarated. *Parke Puterbaugh*

Editor's note: For "15 Minutes" with Art Alexakis, see page 21.

MARAH Kids in Philly

E-Squared/Artemis ★★★★½

On their Web site (marah-usa.com), these guys bill themselves as the last rock & roll band, which I hope isn't true. It's an indisputable fact, however (trust me — I can prove this scientifically), that they're the first great rock & roll band of the new century, the first I've heard in years that doesn't mistake angst for passion or irony for humor. Not only that, but the music of Marah ("Muh-*rah*"), in Greil Marcus's apt phrase, combines a reverence for tradition with a hunger for novelty.

The sonic template of *Kids in Philly* — the follow-up to the debut *Let's Cut the Crap and Hook Up Later On Tonight* (Black Dog, now distributed by DNA) — is Bruce Springsteen fronting the Replacements in a performance of *Exile on Main St.* In other words, lead singer David Bielanko has a raw Springsteenian voice, the guitars are raucous, and the music is basically roots rock played with intensity. All of which is true up to a certain point, but it doesn't do justice to the band's genuine originality. Yes, there are familiar elements, but you've never heard them blended exactly this way. Partly, that's because Marah obviously loves the possibilities of the recording studio. Banjos, xylophones, bells, horns, and all sorts of weird percussion show up where you least expect them to, and the soundscapes are constantly shifting as instruments drop in and out — among other fine qualities, Marah has a fine grasp of dynamics, something of a lost art these days.

More to the point, however, Bielanko's songs are astonishing — mostly odes to the streets of their hometown (this is where the Springsteen comparison is most apt) with lyrics that are about as emotionally affecting as you can get. If poetry, as Mel Brooks once famously remarked, is the shorthand of beauty, then this stuff definitely approaches the poetic (check out the great wounded howl of a G.I. in the middle of the Vietnam firefight that is "Round Eye Blues"). By the way, have I mentioned that the album flashes by — it's a mere 37 minutes long — and that each song is over



STAR SYSTEM	
Stellar	★★★★★
Excellent	★★★★
Good	★★★
Fair	★★
Poor	★

EVERCLEAR, FRANK OCKENFELS/CAPITOL; MARAH, JOHN FALLS/ARTEMIS

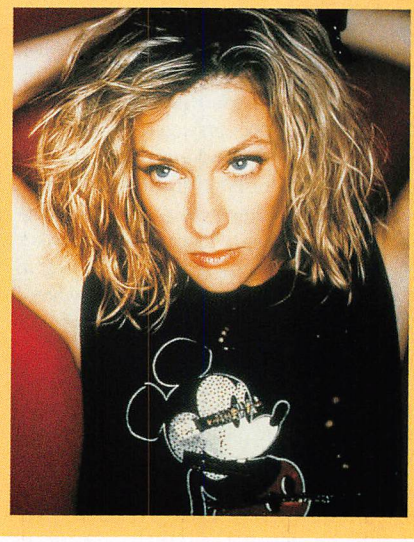
REBUTTAL

SHELBY LYNNE
I Am Shelby Lynne
Island ★★★★½

Shelby Lynne is one of the most talented singers and songwriters in the music business. She can do jazz, blues, and R&B as well as torch songs, pop, and rock. And she does it all very well. After a decade working in the confines of the Nashville machine, she has emerged with an album that represents a first step in the expression of her own music. *I Am Shelby Lynne* is as much a break from the past as John Lennon's *Plastic Ono Band*, so it's appropriate that Lynne has added a cover of that album's "Mother" to her live repertoire.

This is an important album by a unique artist. It should be taken as a whole. To say, as Billy Altman did in his two-star review (May), that it is "an understated set of soul-stirred pop" may betray only a cursory listening. And to say that "Leavin' " is "simply too sketchy to make a lasting impression" is to dismiss a truly serious, sad song. Overall, *I Am Shelby Lynne* is a complex and multihued tableau. I'm confident she'll finally find the widespread success she richly deserves. *James Portanova*

James Portanova, one of our readers, lives in Fresh Meadows, New York. Ever get the urge to write your own "Rebuttal" to a review? Send your 250-word piece to Ken Richardson at soundandvision@hfmmag.com. We'll pay $100 if we print your review.



before you want it to be? But enough of my yakking: Go out and pick up *Kids in Philly* immediately, even if (*especially* if) you've convinced yourself that you'll never have your life changed by a rock band again.

Steve Simels

SINÉAD O'CONNOR
Faith and Courage
Atlantic ★★★½

Never mind the psychodramas, here's Sinéad O'Connor. Whatever new shifts she makes in her public image — she's now a Rastafarian and a lesbian, if you're keeping track — she remains above all a remarkable singer and songwriter. But her confidence went missing around the time she was met with boos at Madison Square Garden, and it's taken her this long to regain her strength, drop the comforting New Age overtones, and get back to business.

That business includes writing haunting melodies, blurring the sexual/spiritual lines, and not being afraid to get up peoples' noses. "Daddy I'm Fine," perhaps the most personal song on *Faith and Courage*, is a brash and punkish tune with an I-regret-nothing lyric. "No Man's Woman" declares either her independence or her newfound sexuality, but it's a delicious pop outburst either way. And she can still get touchingly tender (her overdubbed girl-group harmonies on "Emma's Song" are beautiful) or head into the mystic (the closing "Kyrié Eléison," which mixes liturgical lyrics, Celtic samples, and a Bob Marley quote, is just weird enough to work).

Sound like a comeback? Just about. But *Faith and Courage* is also a new-label debut by an artist who has had ups and downs in the marketplace — and in this day and age, that inevitably means a crew of heavy-hitting producers coming in for insurance. The tag-team here includes Adrian Sherwood, Dave Stewart, Wyclef Jean, and Brian Eno (the most sympathetic of the lot, but he does only one track). You can tell they were thinking commercial from the power-ballad aura of "'Til I Whisper U Something," the retro-soul touches of "Dancing Lessons" (which in Jean's hands seems designed to be mistaken for Lauryn Hill), and the familiar-sounding drum programs throughout. Somebody has forgotten that O'Connor's own production on her first two albums was more original, more fitting, and probably a lot cheaper as well.

Brett Milano

LUCY PEARL
Pookie/Beyond ★★★★

Take Dawn Robinson of En Vogue, Raphael Saadiq of Tony! Toni! Toné!, and Ali Shaheed Muhammad of A Tribe Called Quest, and you have more than a chance meeting on the musical unemployment line. The three have come together as Lucy Pearl at a time when R&B, overwhelmed by raunchy, meandering hip-hop, is desperately in need of well-crafted songs and a light, sexy touch.

The 15 tracks here are stylish and endearing, and unlike some other so-called supergroups, this one balances its powerhouse talents deftly. Saadiq rides a delicious groove of romantic longing in "Without You." Robinson takes the lead for "Don't Mess with My Man" and shines. And in "Can't Stand Your Mother" (amusing, not malicious), Saadiq and Robinson blend like a well-foamed cappuccino. The sweetest cut is "Remember the Times," recalling some of A Tribe's more loose-limbed efforts. But you also get the hard "Hollywood," instantly reminding you that R&B begat rock and not the other way around. In the case of *Lucy Pearl*, R&B hasn't felt this good in a long time. *Claudia Perry*

PEARL JAM **Binaural**
Epic ★★★½

THE ROCKFORDS
Epic ★★

UNIFIED THEORY
3:33/Universal ★★

THREE FISH **The Quiet Table**
Epic ★★★

Are guitar bands becoming marginal in the new millennium? Sure seems that way. More power, then, to keepers of the flame like Pearl Jam — which, after maneuvering its way through an interesting if shaky experimental phase, has settled somewhere near where it started.

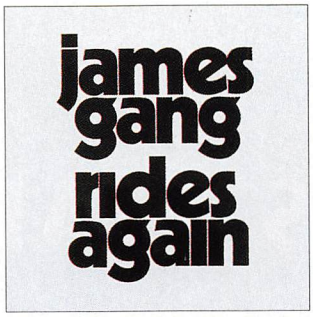
Not that its latest disc, *Binaural*, doesn't show signs of a new maturity, learned lessons, sadder-but-wiseness, and all that. But the basic thrust and kick here is the power and glory of a dual-guitar mainstream rock band. With a few exceptions — notably the ukulele number "Soon Forget," the dreamy/bluesy "Of the Girl," and the vaguely Eastern-inspired "Insignificance," this is a meat-and-potatoes set, anchored by ex-Soundgarden drummer Matt Cameron and graced by Eddie Vedder's newly modest lyrical bent. True, he takes a potshot at Big Brother in "Grievance," but more typical these days are sadly empathetic songs like "Breakerfall" and "Light Years." And if there are no surprises here, it's because the point is no longer to surprise but to deliver a well-paced set of what are recognizably Pearl Jam songs.

Pearl Jam guitarist Mike McCready is also working the mainstream thing with the Rockfords, a group he fronts with childhood pal and fellow guitarist Danny Newcomb and vocalist Carrie Akre. Their eponymous debut has the feeling of a one-shot, a group of friends playing the kind of music they dug while growing up, a type of circa-1980 mid-size arena rock with Akre as an insinuatingly tough babe à la Pat Benatar (but not quite

à la Chrissie Hynde). It's unpretentious to a fault, but things pick up a bit during a soulful guest spot by Heart's Nancy Wilson on "Riverwide," a song she co-wrote with McCready.

Retracing the Pearl Jam trail, we find *Ten* drummer Dave Krusen delivering yet more mainstream crunch on *Unified Theory*, along with former Blind Melon members Christopher Thorn on guitar and Brad Smith on bass. The band has an engaging combination of energy and sleekness. But with lead singer Chris Shinn sounding at times remarkably like the late Shannon Hoon, and with the neo-hippie atmospherics of numbers like "Not Dead" and "Keep On," the overall feeling is of a band saddled with the identity of not quite being Blind Melon.

If that doesn't sound promising, you could do worse than to check out last year's unjustly ignored *The Quiet Table* by Three Fish, namely Pearl Jam bassist Jeff Ament (doubling on guitar), drummer/pianist Richard Stuverud, and vocalist Robbie Robb. They deal in exotic Eastern sounds with appropriately corny lyrics, but Robb sings his parts with such passion and panache that it generally works. Besides, they throw in a few guitar numbers, so you know they must be good guys at heart. *Richard C. Walls*



JAMES GANG Yer' Album; James Gang Rides Again; Thirds; Greatest Hits
MCA ★★★★

Considering that the very first word in the press release announcing these important reissues is "Gonzo," it's no wonder that Joe Walsh is often merely seen as a kinder, gentler, funnier Ted Nugent. Isn't he up to "Funk #562" by now? Well, okay, Walsh has spent a good portion of his solo career playing the clown as well as the guitar. But his first band was a marvel of hard rock and acoustic ingenuity, and it was recorded by producer/engineer Bill Szymczyk — who, need I remind you, would reteam with Walsh (and some other guys) on a certain landmark album called *Hotel California*.

By contrast, *Yer' Album* (1969) and *James Gang Rides Again* (1970) are Motel America — such a *lively* place, especially in these remasters by Szymczyk and Ted Jensen. *Yer' Album* gets the biggest transformation, with deep bass, palpable acoustic guitar, and a punchy attack. It's astounding for a 30-year-old session. Improvements are less dramatic on *Rides Again*, a drier original recording, though the electric numbers do have firmer bass and crisper details. Meanwhile, the material on *Thirds* (1971), which has sounded rather muffled in previous CD collections, now comes across in full glory.

The three studio albums are budget reissues, so the extras — restored artwork, short reflections by various band members — are minimal but appreciated. No rare photos? Shucks. No added lyrics? Oh well . . . . But I *must* pick a few bones related to *Rides Again*, such as the erroneous cueing point for "Asshtonpark" and the erroneous silences between "Woman" and "The Bomber" and between "Garden Gate" and "There I Go Again." Yes, these are quibbles . . . *but these are the kinds of quibbles we music maniacs obsess over. Yadig?!*

The newly assembled *Greatest Hits* does have rare photos as well as neat notes by Szymczyk (an essay plus track-by-track comments), so it's mandatory for collectors. And

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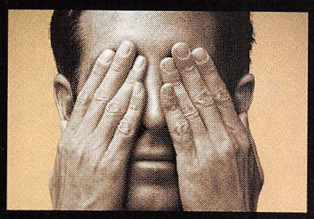
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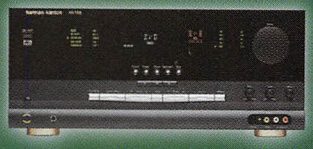




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not only is it well programmed — the gorgeous acoustic "Collage" is here, and so is the electric gorgefest "Stop"/"You're Gonna Need Me" from the previously reissued *Live in Concert* — but it also serves up two great numbers from the soundtrack to the cult movie *Zachariah* and a tantalizing hidden minute of Walsh from the band's demo acetate for ABC Records.

But stop! Says here in the notes to *Thirds* that there's still-unreleased material of the band playing with Little Richard. *Yeeeowww!* Somebody get the lawyers to pry open *that* vault. Meanwhile, bring on the solo albums.

Ken Richardson

MATCHBOX TWENTY

Mad Season

Lava/Atlantic ★★½

The simple difference between "Smooth," the Grammy-winning megahit that Rob Thomas wrote and sang with Santana, and *Mad Season*, the second Matchbox Twenty album, is that the former was a song of celebration while the latter is a journey into misery. Here, the band's lead voice, songwriter, and star-appeal centerpiece confesses to feeling "scared" and "stupid." He's also "bent" and afraid that "I'll never get put back together." He refuses to "sleep in this bed of lies" and mourns "the darkness closing in." He admits that "I'm weaker than I used to be" and "I'm more frightened every day." In short, this is not the feel-good album of the new millennium. It's not even a particularly good feel-bad album.

The main problem is the frequently cumbersome material. Sagging shells of songs are propped up with ungainly horns, string arrangements, and production trickery. Clear away the smoke and mirrors, however, and there's relatively little substance to unfunky rambles like "Black & White People," amorphous power ballads like "If You're Gone," or mock-gospel confessionals like "Bed of Lies." Thomas does strike some pay dirt in the salty, sinuous title track, a convincing portrait of the artist as a young madman. But he usually comes across as confused while the band sounds merely incidental to his emotional bloodletting.

Parke Puterbaugh

THE TRAGICALLY HIP

Music @ Work

Sire ★★★★

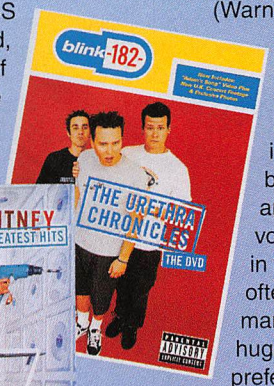
Contrary to the jingoistic fervor that often surrounds The Tragically Hip, the band is more than the sum of its Canadian parts, as witnessed by the mixture of raw power and ethereal beauty on its ninth effort, *Music @ Work*. This is the second album the band and its longtime engineer Mark Vreeken have co-produced with Los Lobos' Steve

CAREFUL WITH THAT MIX, DVD

Fun with anagrams: "five point one surround" = "profound tune revision." "DVD-Audio" = "Avoid dud." Read into that what you will, but if you want a preview of the supposed coming of age of multichannel music, you'll hear plenty on a batch of current DVD-*Videos*.

First, cue up *Two Against Nature*, **Steely Dan**'s "Plush TV Jazz-Rock Party in Sensuous Surround Sound" (Image ★★★½). It's even bisensuous, providing both Dolby Digital and DTS 5.1. Recorded live in the studio for a PBS special, the program is plush indeed, with a mostly tasteful distribution of instruments. Background vocals are isolated in the surround channels, though (and cranked in DTS). Then again, after watching Walter Becker and Donald Fagen conduct wry interviews for "our own public-access TV show," I can imagine them turning to me and observing, "Where else to put background vocals but in the *back*?" Well, you could choose to put them in the right-hand front and surround channels, as **Bob Marley** fans will hear on the all-star tribute *One Love* (Palm Pictures ★★★½). The sound here is natural and full, and the disc has plenty of extras, including multiple camera angles for the big title-track climax. Hungry for more Dan and Marley? Feast on two PCM stereo-only entries in Image's series of "Classic Albums," *Aja* and *Catch a Fire* (both ★★★½).

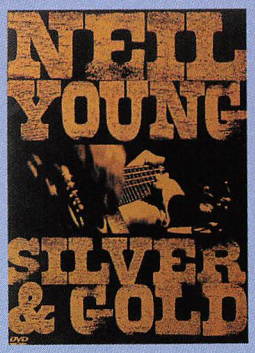




If only we had a camera on George Harrison to see his expression as he hears the Paul-is-feh! diatribe "How Do You Sleep?" for the first time in *Gimme Some Truth* (Capitol ★★★½), filmed in 1971 as **John Lennon** was recording *Imagine*. We do get a nicely interactive discography and a 40-minute interview. Peter Cobbin, who did the *Yellow Submarine* DVD and CD reissues, also worked on the Dolby Digital 5.1 sound here, and again the results are mixed. "Jealous Guy," after teasing us with simple sonics, opens up splendidly, and "I Don't Wanna Be a Soldier Mama" is smashing in huge exaggerated surround. But on tracks like "Crippled Inside" and "Oh Yoko!," Lennon's vocals are AWOL.

The opposite is true of **Jeff Buckley**'s *Live in Chicago* (Columbia Music Video ★★★½), a truly cathartic show (the Metro, 1995) that nonetheless gives far too much emphasis to Buckley's singing, throwing him heavily into the surrounds, often at the expense of his guitar. Extras include two acoustic live-in-the-studio tracks and an "electronic press kit." **Neil Young**'s *Silver & Gold* (Warner Reprise Video ★★★½) has its own occasional problems. This is a beautifully shot, intimate solo show, but the excessive ambience of Neil's voice and guitar in the surrounds often gives the performance an artificially huge sound. I actually prefer the PCM stereo mix for a track like "Daddy Went Walkin'," where it seems like Young is singing directly to me. Then again, 5.1 is great for "Long May You Run" played on a swirling pump organ, even though the center channel isn't used on this DVD.

Young's disc is a model of consistency compared with **Whitney Houston**'s *The Greatest Hits* (Arista ★★★), a real 5.schizo affair. Some selections have heavy vocals and synths in the surrounds; others scale them way back. My favorite track in 5.1 is actually her famous rendition of "The Star Spangled Banner," a genuine stadium-sized thriller; if only the flyover of F-16s had been juiced as well. You can't fault the disc for lack of content: 21 videos (though it's difficult to top the early trio of "Saving All My Love for You," "How Will I Know," and "Greatest Love of All") plus DVD bonuses including lyrics, a photo shoot, and eight additional clips.



If you're looking for something more conservative, you could try **Tommy Castro**'s *Live at the Fillmore* (Blind Pig ★★★), where the surrounds mostly provide subtle ambience with occasional guitar and sax accents. Castro's brand of blues is clean-cut and close-cropped, but at least his guitar solos are

(Continued on page 152)

Berlin, and it builds on the solid, song-oriented foundation of their 1998 collaboration, *Phantom Power*. On one hand, you get balls-out rockers like "Tiger the Lion," which opens with a recurring string movement (played on a guitar synthesizer by drummer Johnny Fay) that interpolates an eerie, echoed vocal sample from singer/songwriter Gordon Downie. The song closes with lead guitarist Rob Baker hammering out an epic solo to rival the elegiac release provided by David Gilmour in Pink Floyd's "Comfortably Numb." On the other hand, you get a handful of ballads like the delay-driven "Toronto #4" and the acoustic treasure "As I Wind Down the Pines," which act as plaintive counterbalances to the surrounding fury.

Want to know more? Sire has reissued the band's first six albums on enhanced (but not remastered) CDs, with content ranging from videoclips to "set list slang," song lyrics, recording histories, Web links, and consistently updated supplemental information via the band's own Web site, thehip.com. Couple all of that with the multifaceted tapestry of *Music @ Work* and you'll find ample evidence that The Tragically Hip deftly transcends musical borders both real and imagined.

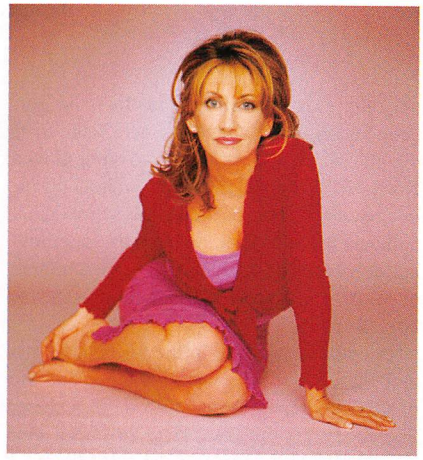
Mike Mettler

COUNTRY

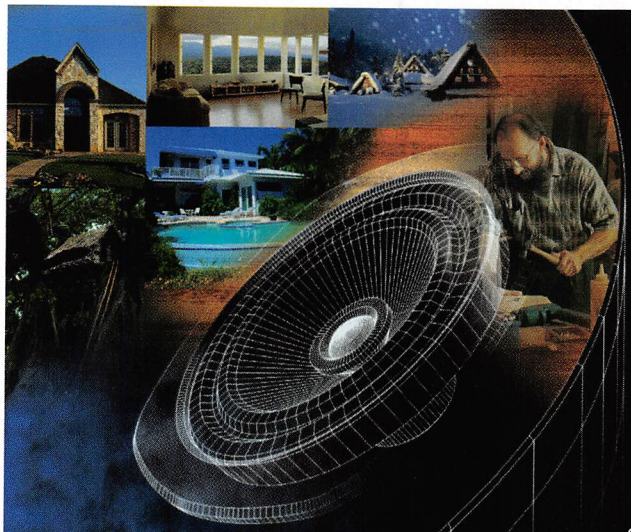
LEE ANN WOMACK
I Hope You Dance
MCA Nashville ★★★

Ever since country music and middle-of-the-road pop locked bumpers at the corner of Chart and Crossover during Nashville's last commercial boom, it seems like any song with an edge has been swept from the genre's suburban streets. This has been especially true for country's female artists, who've been allowed to go frisky (Shania Twain, Dixie Chicks) but rarely deep, leading to an epidemic of platitude-filled "life lesson" songs that seem more appropriate to the inside of a greeting card than to a CD. Accordingly, the few glimmers of hope emerging periodically from mainstream country these days are usually parts of mixed blessings — a fitting description of Lee Ann Womack's current album, *I Hope You Dance*.

Singing in a mountain-pure voice with a Dolly Partonesque shimmer (albeit without the oomph), Womack specializes in the kind of can't-help-falling-in-love, can't-get-over-love ballad that, unfortunately, usually just points but rarely touches. It's difficult not to



cringe at the sappy single mom of "Stronger Than I Am" ("She's just like her old man / Stronger than I am") and the cliché-riddled title hit ("I hope you never lose your sense of wonder"). Ugh. . . . Still, I cheer at the presence of alt.country entries like Bruce Robison's stunning weeper "Lonely Too" ("If you ever loved me the way I loved you / You would be lonely too") and two sterling songs by Julie and Buddy Miller, the gut-wrenching "I Know Why the River Runs" and the raw-nerved, who-said-marriage-was-gonna-solve-all-your-problems "Does My Ring Burn Your Finger." It'd be nice if any of these three songs became singles, let alone hits. Was it really that long



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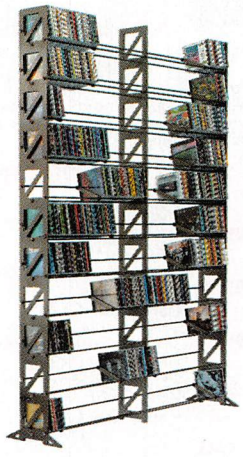
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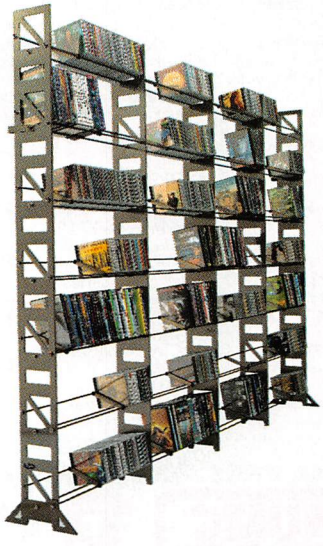




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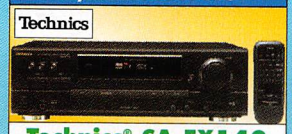
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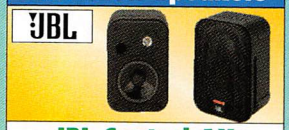
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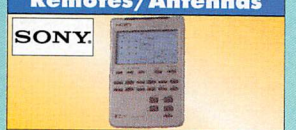
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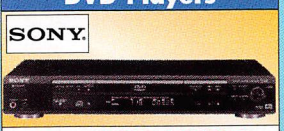
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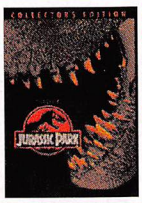
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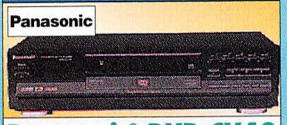
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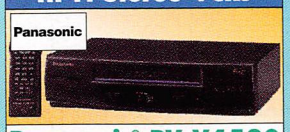
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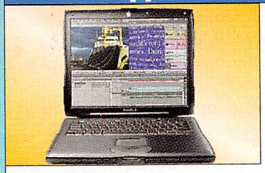
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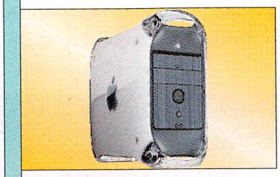
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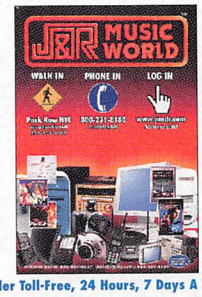
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ago that tunes written by the likes of John Hiatt and Lucinda Williams were in the Top 10 on the country charts, helping to cause the boom in the first place? It seems like forever.

Billy Altman

JAZZ

ANDREW HILL Dusk

Palmetto ★★★★½

Contrary to Howard Mandel's liner notes and Palmetto's advertisements, *Dusk* isn't pianist Andrew Hill's first album in a decade; he debuted two of these pieces on a 1998 French solo disc. But *Dusk*'s importance has nothing to do with scarcity. It's the enigmatic Hill's *best* album since *Shades* in 1986, and arguably his best since his masterpiece, *Point of Departure*, in 1964.

The instrumentation is basically the same as on *Point of Departure*, with tenor saxophonist Greg Tardy, alto saxophonist Marty Ehrlich, and trumpeter Ron Horton filling the roles originally played by Joe Henderson, Eric Dolphy, and Kenny Dorham. The horn solos aren't as edgy; a revolution was taking place in jazz in 1964, and *Point* brought the warring sides together uneasily. But Hill has learned a thing or two about scoring since then, and *Dusk* is the first album to offer proof of his genius as an orchestrator. All eight pieces here, including two featuring only Hill's piano, are crammed with inner detail: twinning bass clarinets on "T.C.," an opening for a heated exchange between Tardy and drummer Billy Drummond on "15/8," a dreamlike horn chorale at the top of "ML," a sly suggestion of Latin *montuno* in Scott Colley's bass line on the title track.

For whatever reason, several of the most ambitious, absorbing jazz releases this year and last have been by veteran outsiders who have never received their just accolades: Sam Rivers's *Inspiration* and *Culmination*, Steve Lacy and Roswell Rudd's *Monk's Dream*, the New York Art Quartet's *35th Reunion*. Andrew Hill's *Dusk* belongs near the top of this honor roll.

Francis Davis

TIP SHEET

Coming Releases

LOUIS ARMSTRONG
The Complete Hot Five and Hot Seven Recordings
Four-disc boxed set. **Columbia/Legacy, Aug.**

THE BAND Music from Big Pink; The Band; Stage Fright; Cahoots
Remastered and expanded. **Capitol/EMD, Aug.**

MARSHALL CRENSHAW
Marshall Crenshaw; This Is Easy
Debut + 9; new "Best of." **Rhino, Aug.**

DAR WILLIAMS The Green World
JOAN OSBORNE Righteous Love
Dar's first in three years; Joan's first in *five* years. **Razor & Tie (Williams), Aug. Womanly Hips/Interscope (Osborne), Sept.**

FASTBALL
The Harsh Light of Day
From the guys who showed us "The Way." **Hollywood, Sept.**

CHRISTIAN McBRIDE Sci-Fi
New album by the jazz bassist. **Verve, Sept.**

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phony in a recording of Prokofiev's and Shostakovich's first violin concertos. The label followed that a couple of years later with the same performers doing the same composers' *second* violin concertos. This time around, with Teldec's apparent blessing, EMI has sunk a shaft into the same rich vein and come up with — what else? — more gold.



It's particularly exciting since the Shchedrin is a new and very good work, composed expressly for Vengerov and premiered by him in 1998. Written for solo violin and a full orchestra-size string section, *Concerto Cantabile* is a work of haunting beauty that sustains interest over 30 minutes with a combination of fascinating melodic and textural development, atmospheric effect, bold virtuosity, and engaging expression — all the things a good concerto should have, made all the more compelling by the austerity the composer has forced on himself. Yet, as we should expect from Shchedrin, this is a colorful and articulate austerity, and its achievement is a compositional tour de force. Rostropovich conducts with keen insight into Shchedrin's expressive aims, into the light and dark of the work's Russian "soul," and, not least, into what strings can do. The result is compelling.

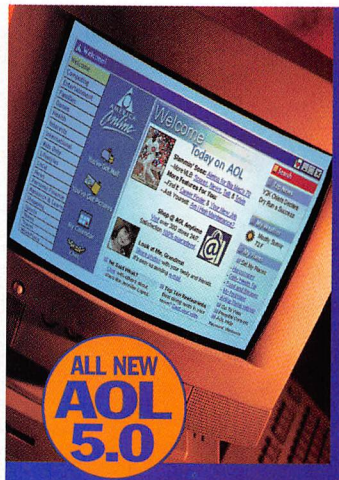
Stravinsky's jaunty concerto is an interesting coupling: Vengerov and Rostropovich convey with evident delight its circus atmosphere and acerbic sense of fun, as well as the faux emotion of its two middle movements. In the Tchaikovsky, they shift gears once again, transforming this gentle lament into a truly big piece. Here, Vengerov's heroically large, burnished tone is a thing of beauty, just as the exuberant virtuosity he brings to the Stravinsky and the Shchedrin still leaves us with our mouths hanging open, though we've come to expect it. Are the Tchaikovsky and Glazunov concertos next? Let's hope so.

The recordings, made in EMI's Abbey Road No. 1 studio, are satisfyingly immediate and detailed if slightly overbalanced in favor of the soloist. *Ted Libbey*

DVD *(continued from page 145)*

thankfully terse. Then there's **Solas**'s *Live* (Shanachie ★★★), a stereo-only but decent-sounding disc highlighting the traditional Irish band's breathtaking reels and beautiful ballads. And *then* there's **Blink-182**'s *The Urethra Chronicles* (MCA ★★½), a tough enough Dolby Digital Stereo disc of the punk trio's "full-frontal" videotape. Though there are some extras here, there's no full-frontal footage except for a baby and a dog.

We finish with two first-volume collections of videos, *And Ya Don't Stop: Hip-Hop's Greatest Videos* and *Sound & Motion*, "A Visual Exploration of Electronic Music in Surround Sound" (both Palm Pictures, both ★★★½). The two-channel *Stop* needs no surround to hammer home **Public Enemy**'s "Fight the Power" and **N.W.A.**'s "Straight Outta Compton." Indeed, the big PCM stereo of **Tupac Shakur**'s "Brenda's Gotta Baby" rivals many of the 5.1 mixes on the other discs here. But *Sound & Motion* does put 5.1 to marvelous use in the **Chemical Brothers**' "Block Rockin' Beats" and **Underworld**'s "Push Upstairs." Gotta turn down your sub, though. Anagram for "gotta turn down your sub": "Sound orgy? Watt burnout!" You have been warned. *Ken Richardson*



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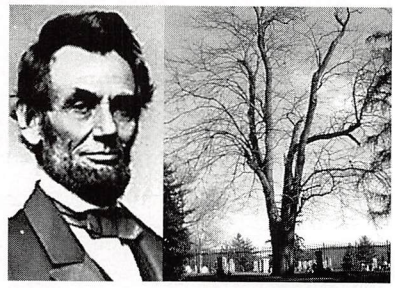
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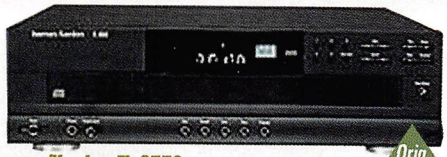
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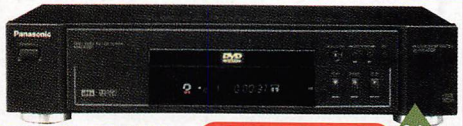
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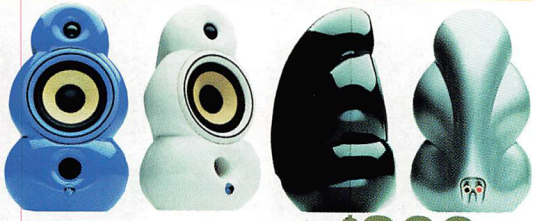
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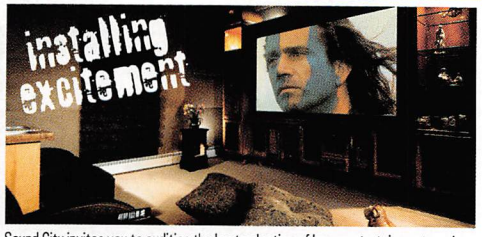
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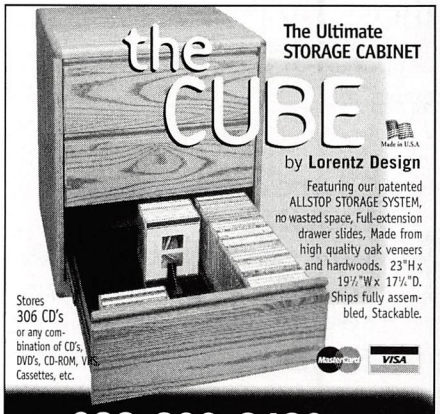
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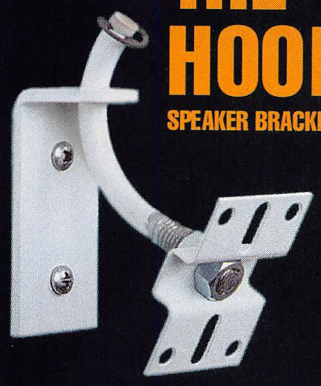
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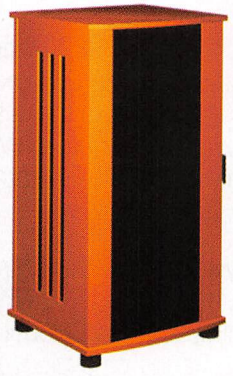
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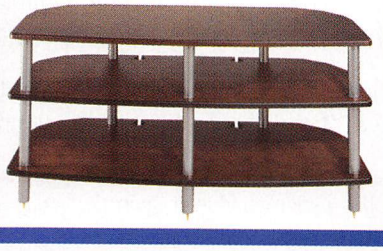
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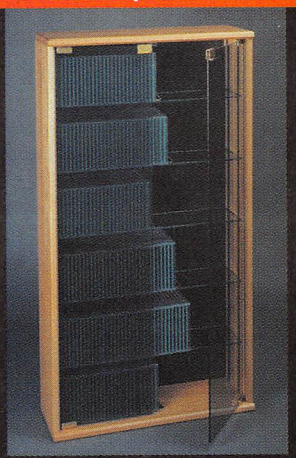
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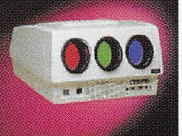
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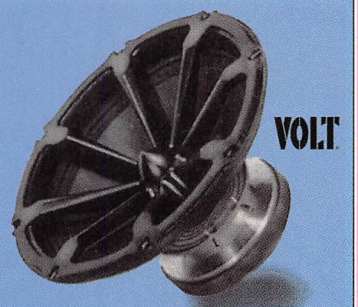
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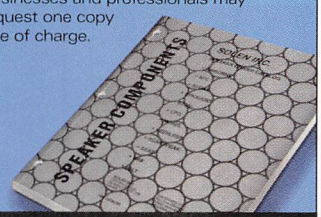
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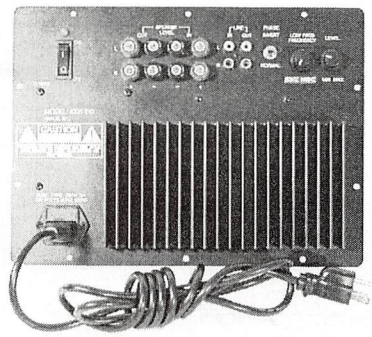


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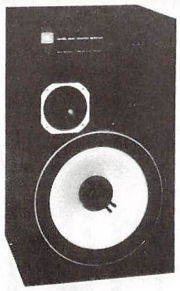
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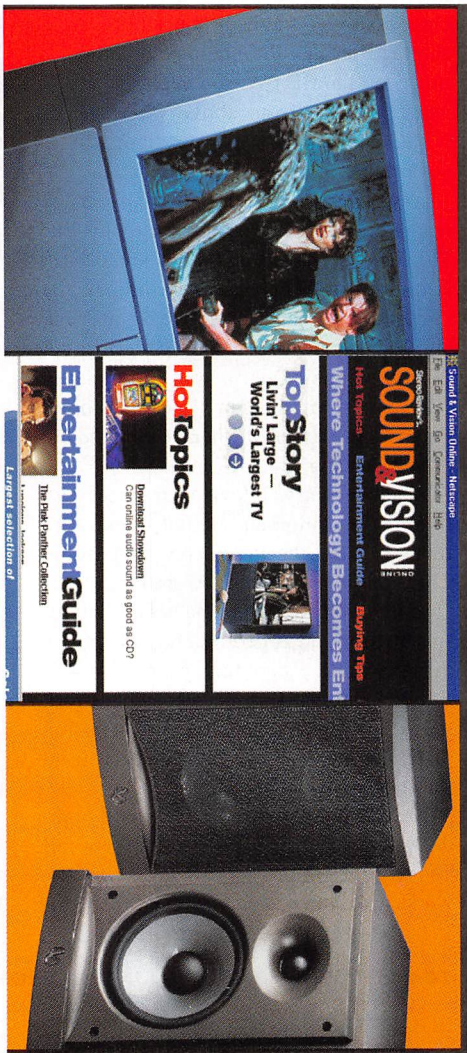
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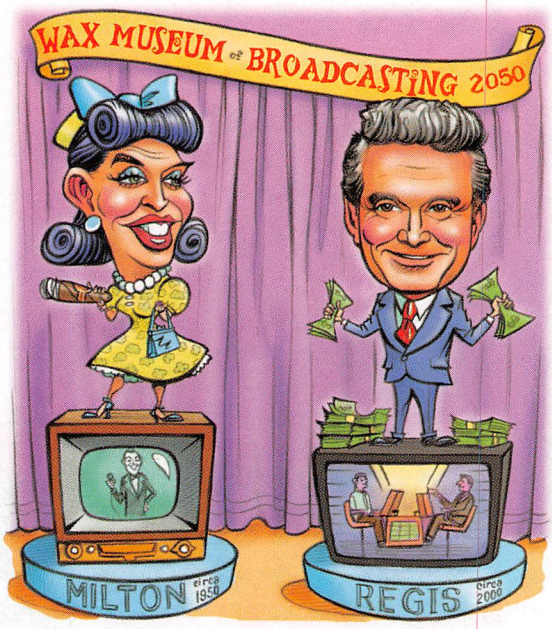
During the years TV pioneer Milton Berle first rode the airwaves, the number of television sets jumped from 190,000 to 21 million. As host of *The Texaco Star Theater* (1948-53) and *The Milton Berle Show* (1954-1956), the comedian came to be known simply as Mr. Television. Berle, whose trademark was appearing in drag decades before members of *Monty Python* displayed the same fashion sense, was the killer application of his day. He makes us wonder what people in 2050 will point to when they look back 50 years to the early days of high-definition television (HDTV).

Two years ago everyone thought the killer app would be sports. It turned out that in the case of the NFL, the real drama was off screen as competing camera crews jockeyed for the best positions. A shortage of high-def equipment sometimes left the HDTV team taking wide-angle pictures from above while the NTSC squad was better positioned to cover more of the field up close.

Last season some high-def proponents thought that prime-time sitcoms like *The King of Queens* and dramas like *Nash Bridges* would be so compelling in the 1080i format that viewers would rush out and buy expensive new sets. It turned out that the King of Queens was no funnier in HD, and Don Johnson's jackets simply looked more rumpled when he climbed out of his Mustang.

More recently, televised movies with filmlike resolution and digital sound were thought to be the killer apps that would cause millions of people to shift their purchasing power from cinema tickets and refreshment-stand popcorn to high-def home theaters. Well, except for a couple of satellite channels and an occasional network movie, there hasn't exactly been a surfeit of HDTV offerings to lure us away from stadium seating at the tenplex.

Now, the big question is, how will high-def programming figure into the new fall TV season? As of early summer, the networks had announced fewer HDTV programs compared with the same time last year, though more may still be announced later. With Mitsubishi dropping its underwriting of high-def for CBS's prime-time series, a CBS spokesman told me, there's no guarantee that the series broadcast in HDTV last season will be seen in high-definition this fall.

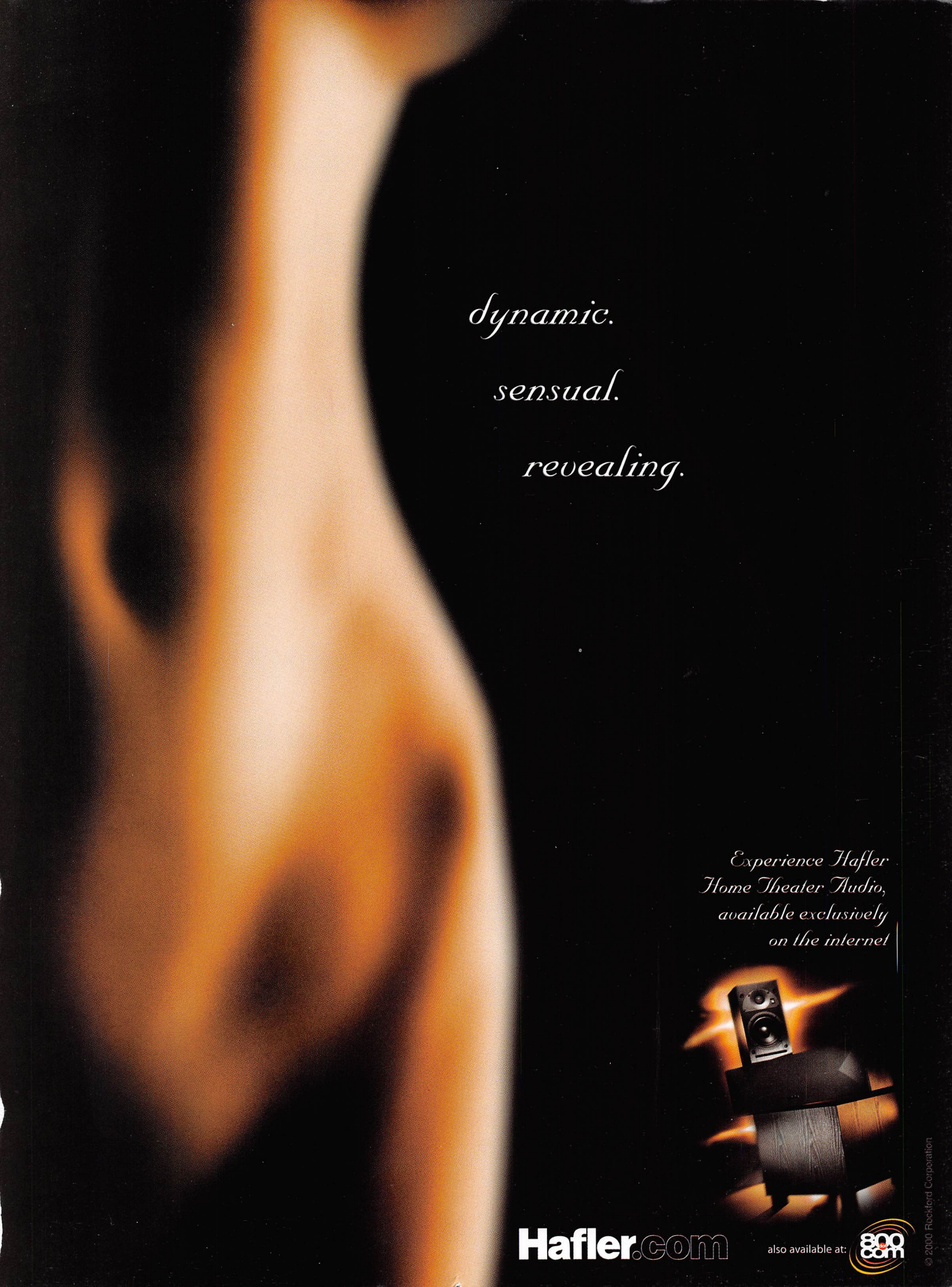


Meanwhile, NBC — the network that won't let 15 minutes go by without reminding us that it's the Official Network of the Olympics — will *not* be broadcasting the Summer Games in HDTV this September. (Nor will DirecTV, which is carrying Olympic coverage from NBC, CNBC, and MSNBC, though presumably it has the digital bandwidth.) So much for the perfect showcase two years after the official launch of the new broadcasting system. Unless you're watching the games in Japan, you're out of luck. Will the Federal Communications Commission please wake up and tell NBC that it's no longer 1980?

While executives in the consumer-electronics industry are muttering to themselves that it will take a bloody miracle for our antiquated analog broadcasting system to be switched off in 2006 — the FCC's goal, assuming that a sufficient number of viewers have replaced their old-style sets by then — I, for one, refuse to be pessimistic. Nevertheless, a radical approach will be necessary to resuscitate HDTV. A few suggestions:

- Employ crass marketing ploys like the one used on Coke cans. For instance, with the purchase of an HDTV set, you get a free admission at the nearest Six Flags.
- Make sure that the one show CBS does broadcast in 1080i is *Survivor*, which has attracted more young viewers to CBS than the network has seen since Edward R. Murrow survived the London Blitz. Not only are upscale voyeurs craving to see those survivors eat rats, but they want to see it on crystal-clear 64-inch screens so there's no chance an unscrupulous producer could substitute goose liver.
- Seed a grassroots campaign in which young ladies pin 16:9 buttons that proclaim "I've seen the future!" on the lapels of customers entering Best Buy and Circuit City stores. If someone asks what it's all about, the ladies should whisper, "HDTV, Aisle 3."
- Use clever product placement, like Reese's Pieces in *ET*. It's too late for a Philips or a Zenith to place its HDTV sets in *High Fidelity*, *High Anxiety*, or *High Plains Drifter*, but for Pete's sake, Sony, for the new *Charlie's Angels* movie get that Hollywood studio you own to hang up Charlie's speaker phone and have him bark out orders on an HDTV set centrally positioned in Bosley's office. M&Ms turned down *ET*. Don't be an M&M, Sony!
- Convince George Lucas to premiere his forthcoming *Star Wars: Episode II* on HDTV on a pay-per-view basis *before* he releases it to theaters.
- Require ABC to shift *Who Wants to Be a Millionaire* to its HDTV affiliates. If Regis Philbin can singlehandedly pull ABC from third to first place in one season, he is clearly America's best hope for jump-starting HDTV now. And, unlike Uncle Miltie, he won't even have to put on a dress. S&V

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